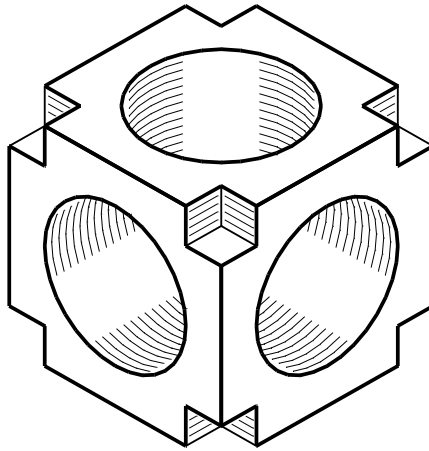


Cad Standard
User's Guide and Tutorial
May 5, 2007



By
Robert Warne &
John Apperson

**Copyright © 2007, John Apperson
All Rights Reserved**

No part of this book, may be reproduced or transmitted in any form, by any means (electronic, photocopying, recording, or otherwise) without permission of the publisher.

Published by Apperson & Daughters : <http://www.cadstd.com>

CadStd User's Guide & Tutorial, First Edition, Release 1
Printed in the United States of America

Table of Contents

Table of Contents

Forward.....	6
Chapter 1: Introduction to CadStd.....	8
Chapter 2: What's on Your Screen?.....	10
The Main Screen.....	10
File Menu.....	11
Draw Menu.....	13
Edit Menu.....	14
Select Menu.....	15
Unselect Menu.....	16
Settings Menu	17
Window Menu.....	18
Undo/Redo Menu.....	19
Help Menu.....	19
Toolbars.....	19
Line Type Toolbar.....	20
Layer Toolbar.....	20
Snap Toolbar.....	21
Keyboard Input Toolbar.....	23
User Prompt Status Bar.....	23
Vector Status Bar.....	23
Icon Panel Toolbar.....	24
Chapter 3: Setting Up Your Drawing.....	25
Startup Wizard.....	26
Dimension Settings.....	27
Accuracy In Digits:.....	28
Align Text:.....	29
Angular Dimension Style:.....	29
Dimension Arrow Type:.....	30
Leader Arrow Type:.....	30
Display Settings.....	31
Grid Settings.....	32
Set Line Type.....	33

Table of Contents

Paper Settings.....	34
Set Text Type.....	37
Save Settings.....	38
Chapter 4: Draw Commands.....	39
Arc (Cen,Sa,Ep).....	40
Arc (Sp,Mid,Ep).....	41
Arc (Sp,Ep,Mid).....	42
Circle.....	43
Ellipse.....	44
Line.....	45
Polyline.....	46
Arrow.....	47
Rectangle.....	48
Dimension Commands.....	49
Dimension Radial.....	50
Dimension Angular.....	51
Text.....	52
Include File.....	53
B-Spline.....	54
Chapter 5: Edit Commands.....	55
Copy.....	56
Move.....	57
Delete.....	58
Simplify.....	59
Rotate.....	60
Mirror X.....	61
Mirror Y.....	62
Scale.....	63
Array Rectangular.....	64
Array Polar.....	65
Change Text.....	66
Change Text Type.....	67
Change Line Type.....	68
Change Layer.....	69

Table of Contents

Change Entity.....	70
Intercept.....	71
Join Lines.....	72
Trim.....	73
Gap.....	74
Offset.....	75
Fillet.....	76
Chamfer.....	77
Replace Text.....	78
Project.....	79
Copy Clipboard.....	80
Chapter 6: Tutorial.....	81
Table of Contents.....	82
Lesson 1: My First CadStd Drawing.....	83
Lesson 2: Creating A Drawing Template For Use In Other Drawings...	93
Lesson 3: Using A Template In A Drawing.....	96
Lesson 4: Using The Offset, Gap, Trim And Intercept Functions.....	100
Lesson 5: Creating Isometric Projections.....	110
Lesson 6: Creating Family History Wall Charts.....	117
Alphabetical Index.....	124

Forward

by John Apperson

When I started a job as a computer-aided design operator in 1981, the computer I used was a Digital Equipment PDP/11. The hard disk was a large device that looked (and sounded) like a washing machine. The hardware/software combination cost about \$100,000.00. About the same time my friend and neighbor, Les Kerrigan, began teaching me about microcomputers. Back then you had to know about hardware, software and programming to get much out of what would someday evolve into the personal computers we know today. As soon as I could write computer programs I began dreaming of creating computer-aided design software for home use. I bought my friend's Z80 microcomputer and started writing small fast computer programs. Someone I met at my job gave me an HP storage tube terminal. It looked like an old radar screen, but it could draw vectors across the screen by sending it special character codes. My boss let me use a small HP pen plotter and I began writing computer-aided design code. About the time the IBM-AT was beginning to appear, another friend, Ed Saari, saw promise in what I could do if I had proper equipment and donated an IBM AT to my cause. Now I had a computer with "raster" graphics and had to learn to translate my vector CAD data onto the screen. Once I spent an entire week's vacation writing code in assembler so my CAD program could run faster. In September 1987 I placed an ad in the Buyer's Mart section of BYTE magazine. Part of it read:

FINALLY! - CAD Technology that compares with High-Tech Industry CAD Systems. ONLY \$65.00.

We received hundreds of requests for more information, but only one order. Since the ad cost \$500.00, it seemed my dream of creating a CAD program everyone could afford was beginning to fade. It wasn't long before DOS applications began to fade and Windows applications were starting to dominate. I got discouraged because Windows graphical applications were extremely difficult to debug - they typically just froze and you had to reboot. So I stopped programming at home and started programming (in C) for the UNIX Xwindows environ-

Forward

ment at work. I didn't start working on my CAD program again until about 1996. Windows 95 was a little more stable and Borland began selling Delphi (an object-oriented Pascal environment). I told a friend, John Longyear, I was working on a CAD program for Windows 95, and he looked at me funny and said, "Yea, right". I took this as a personal challenge and placed my first Windows version, now called CadStd on my personal web page as freeware. John seemed impressed with the results and I figured if I couldn't make money selling CAD software, I could at least let others benefit from the thousands of hours of work that it took to create it. The response was overwhelming. People from all over the world started using CadStd and requesting new features. So in response I began to upgrade CadStd and eventually created CadStd Pro. In order to honor the hundreds of thousands of users that encouraged development I still provide CadStd Lite to users at no charge.

In hopes that we can provide more value to our CadStd Pro users, we created this document. I'm sure it won't be perfect but I hope will help answer a few questions. I would like to thank my wife Sherrie & my daughters for putting up with the countless hours of work I put into this project. I would also like to thank Robert Warne for taking the challenge to write this manual and for the great results. Thank you for supporting the Apperson family in the realization of their dream,

John Apperson

Chapter 1: Introduction to CadStd

by Robert Warne

Computer Aided Drafting has transformed the traditional way of drafting by hand. Tools such as scales, templates, rulers and drafting tables are no longer necessary pieces of equipment to design accurate plans for a project. A traditional drafting background is helpful, but not required to perform the same drawing techniques in CAD. I have been told that the initial drawing takes just as long as it used to by hand, but the real benefit comes when doing revisions. And everyone who has ever created a drawing for themselves or for clients knows there are always changes. Modifications are an integral part of the design process.

When I first started drafting I was somehow under the impression that there were only a couple of programs that could be used for drafting. It didn't take long for my eyes to be opened and for me to realize that there were many CAD programs on the market. Another observation I made when I was interested in purchasing CAD software to use on my home computer was that the price range between products varied greatly. This seemed odd because most of CAD programs on the market were designed to help you achieve the same end result.

For my job I was required to draw single line diagrams and schematics for audio, electrical, plumbing and controls. I also designed lighting layouts, audio layouts and other equipment layouts for various entertainment facilities. I found CAD very useful when determining how much and where to place the equipment in a particular room or provided space. I found CAD very useful when determining hole placements and sizes for drilling and mounting. I found it very convenient to be able to make a parts list right on a drawing. With the part number, manufacturer and quantity information right on a drawing I could eliminate extra sheets of paper and confusion for ordering and reordering materials. CAD has also proved invaluable to me at home. From laying brick to landscaping my yard, CAD enabled me to maximize my utilization of the space available to me.

Chapter 1: Introduction to CadStd

One paramount thing that I learned though, is that everything I've ever done using expensive, "name brand" CAD software, can be done using CadStd. In fact, CadStd eliminates the unnecessary redundancy of methods to execute a single command built into many programs. That isn't to say CadStd is a stripped down El Camino of a program to keep the price low. Rather CadStd Pro performs like a loaded Lexus available at a wholesale price.

CadStd was designed by John Apperson who knows the CAD process from inside out. With CadStd he has struck a perfect balance by providing you with exactly what you need to create your drawing in a user friendly, convenient environment.

Whether you are new to CAD or a CAD veteran, CadStd will accommodate your needs and meet all of your expectations. CadStd can be used for the most basic of drawings to the most complex.

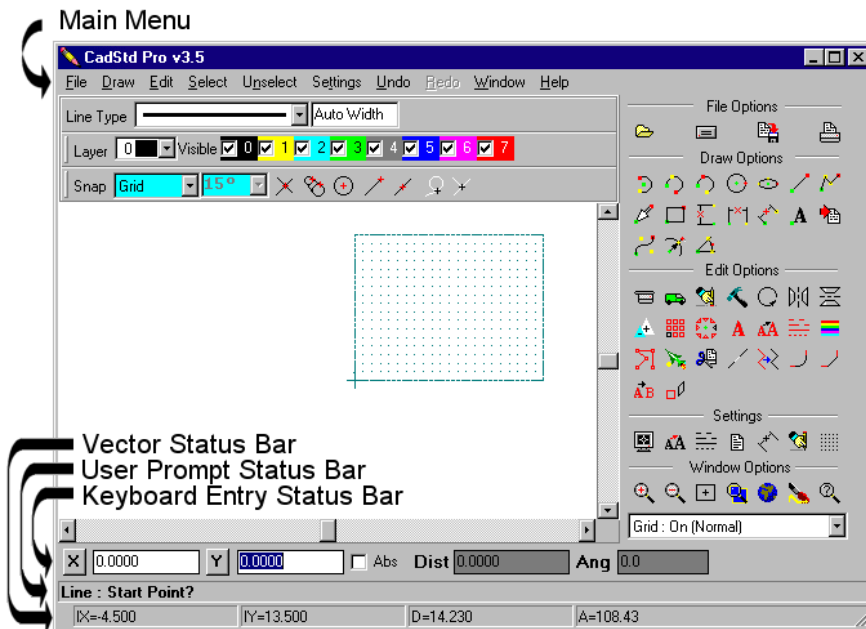
This CadStd User Guide and Tutorial will help you understand the fundamentals of CadStd. It will introduce you to the tools available to create the drawings you desire for your specific project. It will be your quick reference for questions regarding appropriate use of drawing tools and commands, where to find the tools and commands and how to efficiently use them. The User's Guide and Tutorial is designed to help you learn the program and its functions so you can create drawings with minimal mistakes or holdups.

Robert Warne

Chapter 2: What's on Your Screen?

The Main Screen

The **Main Screen** in CadStd is functionally set up to allow you easy access to the tools and commands necessary to complete your drawing. The screen is broken into sections with names that will be referred to throughout the manual. The labeled graphic above represents the naming convention applied to the various aspects of CadStd.



The menu items along with the graphic icon tools provide you with two possible ways to perform an operation. Some might favor the graphic tools, some the menu items.

File Menu

The following **File Menu** options are available in CadStd.

1. The **New** command clears the existing drawing of all entities after warning it is about to do so.



2. The **Open** command loads a drawing into the work area.



3. The **Print** command prints the existing drawing to the printer after first allowing you to set printing parameters.



4. The **Save** command saves the existing drawing.



5. The **Save As** command saves the existing drawing to a file after requiring you to designate a file name and location.

6. The **Export DXF** command allows you to write a DXF file to a name that you specify. (DXF files can be read by Autocad and many other programs).

7. The **Import HPGL** command allows you to load an HPGL/1 file into a drawing.

8. The **Export SVG** command allows you to create scalable vector graphic files that are easy to incorporate into an HTML file. Adobe's Acrobat Reader 5 includes an SVG viewer.

File Menu cont.

9. The **Undo Last Exit** command only appears if you exited your last drawing without saving. This should also appear if your system crashed (say due to a power failure). After selecting the **Undo Last Exit** menu the old drawing you thought you lost should reappear.
10. The **Exit** command lets you end the program after being asked if you would like to save changes to the drawing.

Chapter 2: What's on Your Screen?

Draw Menu

The **Draw Menu** contains the necessary functions needed to create the fundamental elements of your drawing. The Draw commands will be discussed in greater detail in Chapter 4.

The CadStd **Draw Commands** are:

- Arc (Cen,Sa,Ep)
- Arc (3 points)
- Arc (Sp,Ep,Mid)
- Arrow
- B-Spline
- Circle
- Dimension Vertical
- Dimension Horizontal
- Dimension Diagonal
- Dimension Radial
- Dimension Angular
- Ellipse
- Include File
- Line
- Poly Line
- Rectangle
- Text

Edit Menu

The **Edit Menu** functions are used to edit and enhance the elements of your drawing. The Edit commands will be discussed in greater detail in Chapter 5.

Edit Commands are:

- Array (Polar)
- Array (Rectangular)
- Chamfer
- Change Text
- Change Text Type
- Change Line Type
- Change Layer
- Change Entity
- Copy
- Delete
- Fillet
- Gap
- Intercept
- Mirror X
- Mirror Y
- Move
- Offset
- Project
- Replace Text
- Rotate
- Simplify
- Scale
- Trim
- Copy Clipboard (Raster)
- Copy Clipboard (Vector)
- Copy Clipboard (Whole Window)

Select Menu

The **Select Menu** should not have to be used very often by most users. However there are times when selecting a vertex or an entity to move, it is the simplest way to perform your edit. You might want to try the *Change Entity* command as an alternative.

1. The **Select All** command selects every entity in the drawing.
2. The **Invert Selection** command selects every entity that is unselected and unselects every entity that is selected.
3. The **Invert Select Ent** command selects a single entity that is unselected or unselects an entity that is selected.
4. The **Select Entity** command selects one entity at a time.
5. The **Select Entity Window** command selects all entities within or crossing a window area.
6. The **Select Vertex** command selects a single vertex at a time.
7. The **Select Vertex Window** command selects all vertices within a window area.

Note: When using the **Select Entity** command, you can drag your mouse to select and unselect various entities. By dragging right you select the entities touched by the drag box. By dragging left you unselect the entities touched by the drag box. This applies to all commands that require the selection of entities.

Unselect Menu

The **Unselect Menu** should not have to be used very often by most users. However there are times when selecting a vertex or entity and moving it is the simplest way to perform your edit. Use these menu items when you have selected more entities than you intended to or wish to unselect all entities.

1. The **Unselect All** command unselects every entity in the drawing.
2. The **UnSelect Entity** command unselects one entity at a time.
3. The **UnSelect Entity Window** command unselects all entities within or crossing a window area.
4. The **Unselect Vertex** command unselects a single vertex at a time.
5. The **UnSelect Vertex Window** command unselects all vertices within a window area.

Note: When using the **UnSelect Entity** command, you can drag your mouse to unselect an entity or entities. By dragging left you unselect the entities touched by the drag box. This applies to all commands that require the selection of entities.

Chapter 2: What's on Your Screen?

Settings Menu

See chapter 3 for details on the following commands found within the settings menu :



1. Dimension Settings



2. Display Settings



3. Grid Settings



4. Line Type Settings



5. Paper Settings



6. Text Type



7. Save Settings

Window Menu

The **Window Menu** is where you will find the commands that will help you zoom in or out of your drawing, repaint or query elements.



1. The **Repaint** command repaints the entire drawing. This might need to be used to remove “artifacts”(i.e. lines or graphics not really in the database) left behind by various commands.



2. The **Center** command allows you to center the display around a point that you specify. Once a point is selected using the mouse or manual toolbar, that point will then be positioned in the center of your screen.



3. The **Zoom Window** command allows you to zoom the display to a window you specify. You will be prompted to pick a first and second point for the window. Once specified, the objects within the range selected will be zoomed.



4. The **Zoom All** command zooms out to view the entire paper limits. To see entities outside the paper limits use the Zoom Out command.



5. The **Zoom In** command zooms 2x closer to the center of the display.



6. The **Zoom Out** command zooms 2x farther from the center of the display.



7. The **Query** command displays information about the elements selected.

Chapter 2: What's on Your Screen?

Undo/Redo Menu

The **Undo** and **Redo Menu** items are available whenever it is possible to undo or redo a user action. With the Pro version you may be able to undo several hundred times. But, Undo will only work on actions executed up until the **Save** or **Reset** commands are used. It is recommended that the **Save** and **Reset** commands be used cautiously.

Help Menu

The **Help Menu** includes: About, Help and www.cadstd.com.

Toolbars

CadStd toolbars conveniently provide you with the ability to monitor or modify settings and execute commands. Many of the CadStd features are just a mouse click away on the tool bars.

Line Type Toolbar



The **Line Type Toolbar** allows you to set your default line type. All of the CadStd **Line Types** are set to a default **Auto Width** which ensures all of your lines are drawn proportionately to the scale of your drawing. CadStd does have a **User Defined Width** option available for you to set your own custom line widths. You can set the default line type from the Line Type Tool Bar, from the Main Menu under Settings or from the Settings Icon Toolbar. To change the line type of a particular entity without changing the linetypes throughout your whole drawing, *see **Edit Line Type***.

Layer Toolbar



The **Layer Toolbar** helps you to keep track of what layers are on or off and what layer you are currently drawing on. The tool bar allows you to select what layer you want to draw on and what layers you want to view. After drawing an entity on one layer you can then change the layer of that entity. For more details about changing an entity's layer, *see **Edit Layer***.

Snap Toolbar



Use the **Snap Toolbar** to precisely pick specific points in your drawing. The first feature of this toolbar is the pull down selection that allows you to specify if you whether you want to **Snap to Grid**, **Angle** or **None**. Snap to Grid and Angle is similar to ortho in other drawing programs.

If you choose to **Snap to Angle**, the next pulldown selection is the **Degree of Angle**. This feature is selected when you want to draw a specific line a line at a particular angle from its vertex. If set angle to snap every 15 degrees, you will be able to draw lines in 15 degree increments from their vertices.

The seven icons to the right of the Angle pulldown are the **Snap Icons**. For more details about these icons, *see Snap Icons*.

The **Snap Icons** are grey (as seen below) when they are inactive, and turn red when they are active and available for use.



1. The **Snap Intersection** command lets you snap a point at the intersection of two entities.



2. The **Snap 2 Arcs Tangent** command lets you snap a line to the tangent point of two arcs or circles.



3. The **Snap Center** command lets you snap a point to the center of arcs or circles.



4. The **Snap Mid Point** command lets you snap a point to the midpoint of a line or arc.

Chapter 2: What's on Your Screen?



5. The **Snap End** command lets you snap a point to the end of arcs, lines or circles.

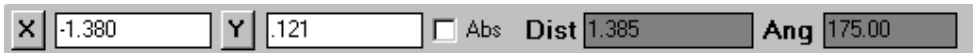


6. The **Snap Tangent** command lets you snap a point to the end of arcs, lines or circles.



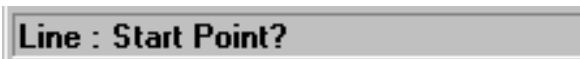
7. The **Snap Perpendicular** command lets you snap a line perpendicular to lines, arcs or circles.

Keyboard Input Toolbar



The **Keyboard Input Toolbar** has four fields and one check box. There is a manual input field for **X** coordinates and one for **Y** coordinates, a field for **Distance** and one for **Angle**. The Abs check box is where you specify if you want the values to be **Absolute** or not. If the box is checked, the Absolute values for the X,Y coordinates entered will be referenced from 0,0 instead of relative to the last point. The default is unchecked.

User Prompt Status Bar



The **User Prompt Status Bar** provides information about the current command engaged. The instructions in the **User Prompt** should not be ignored. Following the user prompt instructions will save your time and temper.

Vector Status Bar



The **Vector Status Bar** gives you the absolute X,Y or incremental IX,IY coordinates and also displays the distance and angle.

Toolbars cont.

Icon Panel Toolbar

The **Icon Panel Toolbar** is broken into sections. The sections are: **File Options**, **Draw Options**, **Edit Options**, **Settings**, **Window Options** and **Grid**.



Chapter 3: Setting Up Your Drawing

Before starting a drawing, it is helpful you orient yourself with the program. I like to use a buffet analogy to describe this orientation. One of the things I find frustrating about going to a buffet is having to wait in a long line to get to the food. So before seeing all of the food available, frustrated from the long line, I immediately pile on the first things I get to because I don't want to pass something up and later have to get back in the line again. I call it going blind into the buffet. I don't want you to have to go blind into the buffet that CadStd has to offer, so I will show you the different features of CadStd before you start your drawing.

Startup Wizard

Upon launching the program you have the opportunity to accept the **Startup Wizard**. This is a recommended feature to use at first, to ensure that you apply the correct settings for your drawing. The Startup Wizard is geared toward simplifying the setup process for all levels of users.

The first option is to select a **Blank Drawing**. This allows you to use settings you've previously saved to create new drawings.

The second option is the **Drawing Scale Expert**. This is very useful when starting a new drawing. It will help you select your paper size (Standard/Metric) and unit type. Once you've made your selections, you enter the approximate dimension of the object you are drawing. Then you can click finish and a new drawing will be configured for your use.

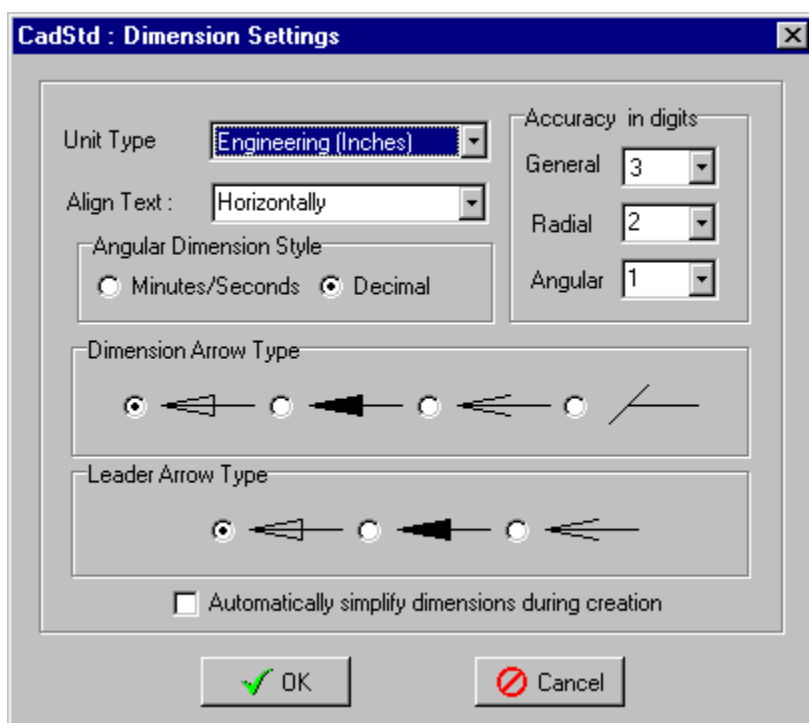
The third option is the **Gedcom Import Helper**. This would be used to create circular pedigree charts and wall charts from Gedcom (genealogy database) files. See the tutorial section for more information about this command.

After you have used the startup wizard to begin your drawing there are several other commands you can use to give yourself even more control over the way your drawing appears. They are described in the remainder of this chapter.

Dimension Settings



The **Dimension Settings** command is used to set values that effect the way dimensions are displayed. You can control the way dimensions are displayed by changing the following settings in the **CadStd: Dimension Settings** box:



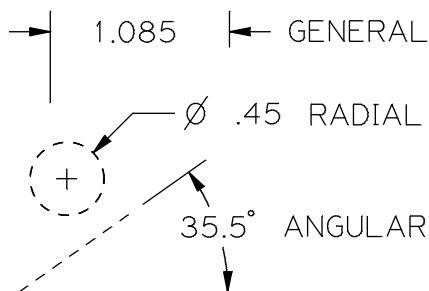
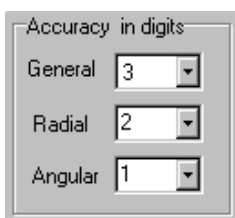
Dimension Settings

cont.

Accuracy In Digits:

The accuracy setting is used to define the number of digits following the decimal point when displaying dimensions. ACCURACY IN DIGITS does NOT effect in any way the precision of the data base entities. Accuracy in digits can be given different values for General dimensions, Radial dimensions and Angular dimensions.

Example:



With a dimension distance equal to 0.12345 :

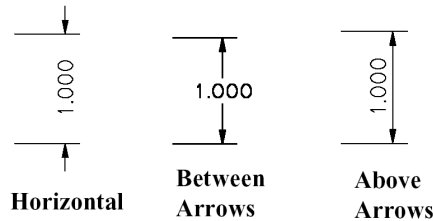
- 0 digits = 0
- 1 digit = 0.1
- 2 digits = 0.12
- 3 digits = 0.123
- 4 digits = 0.1234
- 5 digits = 0.12345

Dimension Settings

cont.

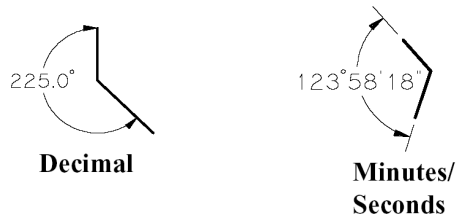
Align Text:

This box is where you specify whether you want your dimension text to align **Horizontally**, **Between Arrows** or **Above Arrows**.



Angular Dimension Style:

This option allows you to set the style of your angular dimensions. **Minutes/Seconds** or **Decimal** are your two options.



Dimension Settings

cont.

Dimension Arrow Type:



There are four arrow types to choose from for dimensioning. Once you set your **Dimension Arrow Type**, this will serve as the default arrow type for all Vertical, Horizontal, Diagonal and Angular dimensions in your drawing. You can change arrow types after dimensions have been made. To do this just open the **Dimension Settings** command, pick the new arrow type and accept it by clicking the OK button. All of the dimension arrows will automatically change.

Leader Arrow Type:



There are three leader arrow types to choose from. Once you set your **Leader Arrow Type**, this will serve as the default arrow type for all radial dimensions and arrows created using the **Arrow** command in your drawing. You can change your arrow types anytime. To do this just open the **Dimension Settings** command, pick the new leader arrow type and accept it by clicking the OK button. All of the leader arrows will automatically change.

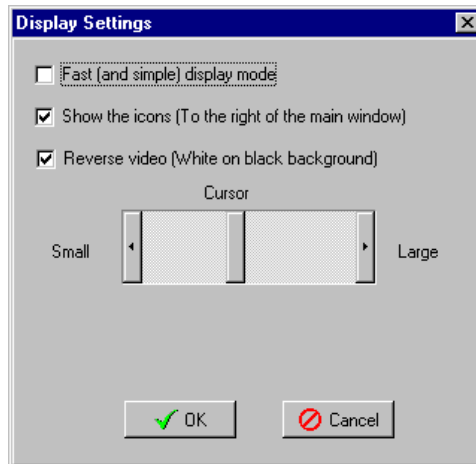
Display Settings

The Display Settings dialog box allows you to specify the appropriate settings you need for your drawing.



1. The **Display Setting** command allows you to make several choices about how CadStd displays data or menus.

- The **Fast** check box forces CadStd to show all lines and text in a simplified manner (Default=Unchecked).
- The **Show the Icons** check box turns the icons on the right side of the CadStd window on or off (Default=Checked).
- The **Reverse Video** check box tells CadStd to draw white entities on a black background (Default=Checked).
- The cursor setting control allows you to set the size of the select box that appears when you need to select an entity.



Grid Settings

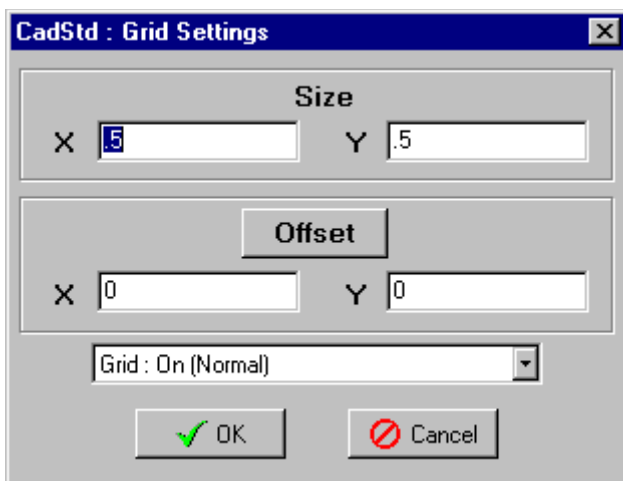


6. The **Set Grid** command allows you to define a grid pattern that displays on your screen to help you enter coordinates with a mouse in an accurate manner. The grid size is entered by an X: horizontal dimension and a Y: vertical dimension.

The **Grid Offset** command allows you to offset the origin of the grid while retaining its spacing.

Considering the X axis only, imagine a grid spacing of .1. The grid points would lie on positions .1, .2, .3, .4 etc. With a grid offset of .025 in the X axis the grid points would lie on positions .125, .225, .325, .425 etc.

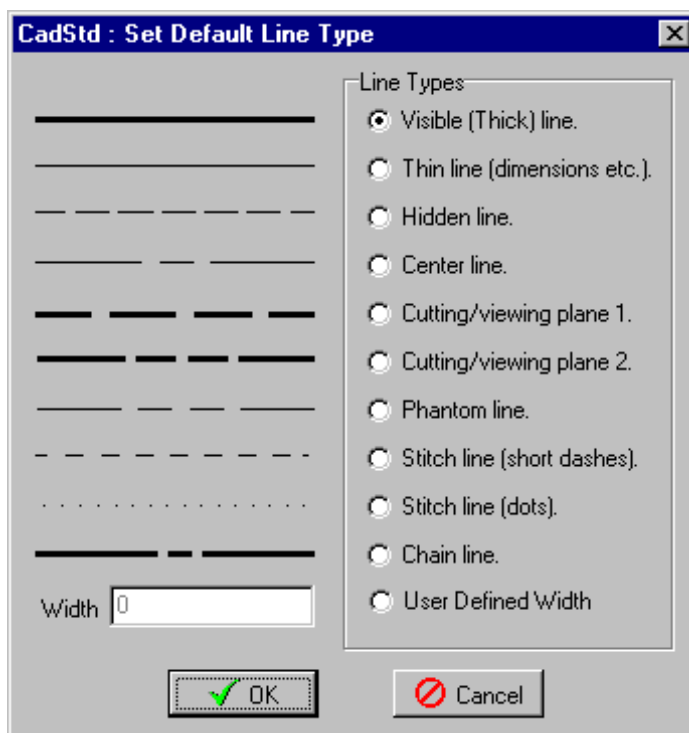
You can also display the grid in three other ways : Isometric front/rear, Isometric left/right and Isometric top/bottom.



Set Line Type



3. The **Set Line Type** command allows you to select one of the following line styles to be the default line style. These line styles are defined by the ANSI standard.



Paper Settings



5. The **Paper Settings** command allows you to set the size and scale of your drawing. You would bypass these steps if you are using the Startup Wizard's Drawing Scale Expert (see Setting Up Your Drawing in Chapter 3). Below is an example of the **CadStd: Paper Settings** box and the fields available to specify various values.

Size:

Standard and Metric paper sizes are available. You may also specify your own custom size of paper. Paper size is usually determined by factors such as: who the drawing is for, what sizes of paper your printer or plotter can handle and, most importantly, the scale of your drawing.

Chapter 3: Setting Up Your Drawing

Paper Settings

cont.

Orientation

This where you would specify either Portrait or Landscape for your drawing.

Offset From 0,0

The offset from 0,0 default setting designates the lower left corner your drawing as $X=0$, $Y=0$. CadStd also allows you to manually enter custom coordinates for X,Y, or manually pick the location for the lower left corner of your drawing.

Paper Settings

cont.

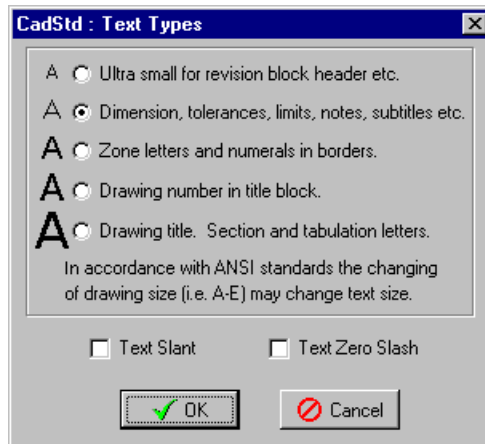
Scale:

When creating a drawing with CadStd it is important to draw entities exactly the same size as they will exist in the real world. For example, if you are drawing a bolt that is two inches long, it should be drawn two inches long in the CadStd database. CadStd's Scaling feature allows you to maintain real world dimensions that are proportionately scaled to fit on the size of paper you are creating your drawing on. To set the scale of your drawing, enter the value each unit of measurement will represent on **Paper**. Then enter the value each unit of measurement on **Paper** will be represented in the **Real World** or CadStd database. Then pick the equal button, and the scale will be computed and appear in the scale box. If you create a drawing that fits within the area of one square inch you may want to set your **Paper Scale** to eight to one which means that eight inches on the paper represents one inch in your database and in the **Real World**. Or you may have a drawing that contains a one hundred inch long entity that you wish to represent on paper. A proper scale for this drawing would be one to ten, which means one inch on paper equals ten inches in the real world.

Set Text Type



2. The **Set Text Type** command allows you to select one of the following text styles to be the default text style. All text sizes are NOT affected by drawing scale. In accordance with ANSI standards, the changing of drawing size (i.e. A..E or A4..A1) may change text size.



Save Settings



7. The **Save Settings** command lets you save all the values you have set for your drawing. The values will be maintained until you change them. It is not necessary to re-enter the values already saved each time you open the same drawing.

Chapter 4: Draw Commands

A knowledge of the various **Draw Commands** will speed up your drawing time and enhance the accuracy of your drawing. As you become familiar with the commands you will find which ones work best for you and will begin to use the commands in increasingly more advanced ways.

The commands discussed in this chapter will familiarize you with the basic steps of execution. The methods described will provide you with the basics to perform desired editing operations. The following chapter will provide you with a reference when using the edit commands.

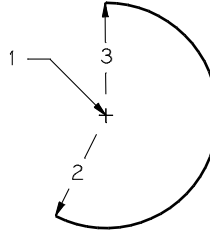
- Arc (Cen,Sa,Ep)
- Arc 3 points (Sp,Mid,Ep)
- Arc (Sp,Ep,Mid)
- Circle
- Ellipse
- Line
- Polyline
- Arrow
- Rectangle
- Dimension Vertical
- Dimension Horizontal
- Dimension Diagonal
- Dimension Radial
- Dimension Angular
- Text
- Include File
- B-Spline

Arc (Cen,Sa,Ep)

The **Arc (Cen,Sa,Ep)** command allows you to input arcs defined by the center, start angle and end point. Zero degrees is to the right of center and all other angles are calculated in counterclockwise direction. The Set Line Type command should have been issued prior to this command to assure that the proper line style is used.

Key Steps

1. Center?
2. Start Angle?
3. End Point?



1. **Arc (Cen,Sa, Ep) : Center?** will appear in the *User Prompt* after the command is selected. Select a center point for your arc.
2. **Arc (Cen,Sa, Ep) : Start Angle?** will appear in the *User Prompt* after the center point is selected. In the *Edit Box* labeled **ANG**, type the desired angle for your arc or pick a point on the screen with the cursor.
3. **Arc (Cen,Sa, Ep) : End Point?** will appear in the *User Prompt* after the angle value is entered. Select an end point to complete your arc.

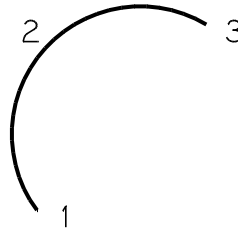
Note: The *Snap Commands* may be used to align any of these three points to an existing entity. Also, you may need to change “snap to grid” to “none” if you are having trouble sizing your arc.

Arc (Sp,Mid,Ep)

The **Arc (Sp,Mid,Ep)** command allows you to input arcs defined by any three points. The first point will be the start point of the arc. The second will be the mid point to draw the arc through. The third will be the end point of the arc. The Set Line Type command should have been issued prior to this command to assure that the proper line style is used.

Key Steps

- 1. Start Point?**
- 2. Mid Point?**
- 3. End Point?**



1. Arc (Sp,Mid,Ep): Start Point? will appear in the *User Prompt* after the command is selected. Select a start point for your arc.

2. Arc (Sp,Mid,Ep) : Mid Point? will appear in the *User Prompt* after the center point is selected. Select a mid point for your arc.

3. Arc (Sp,Mid,Ep): End Point? will appear in the *User Prompt* after the angle value is entered. Select an end point to complete your arc.

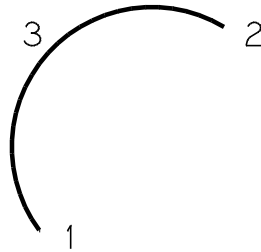
Note: The *Snap Commands* may be used to align any of these three points to an existing entity. Also, you may need to change “snap to grid” to “none” if you are having trouble sizing your arc.

Arc (Sp,Ep,Mid)

The **Arc (Sp,Ep,Mid)** command allows you to input arcs defined by any three points. The first point will be the start point of the arc. The second will be the end point of the arc. The third point will be a mid point on the arc. The Set Line Type command should have been issued prior to this command to assure that the proper line style is used.

Key Steps

- 1. Start Point?**
- 2. End Point?**
- 3. Mid Point?**



1. **Arc (Sp,Ep,Mid) : Start Point?** will appear in the *User Prompt* after the command is selected. Select a start point for your arc.
2. **Arc (Sp,Ep,Mid) : End Point?** will appear in the *User Prompt* after the center point is selected. Select an end point for your arc.
3. **Arc (Sp,Ep,Mid) : Mid Point?** will appear in the *User Prompt* after the angle value is entered. Select a mid point to complete your arc.

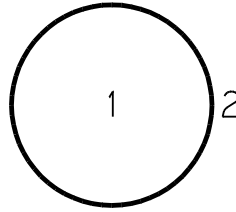
Note: The *Snap Commands* may be used to align any of these three points to an existing entity. Also, you may need to change “snap to grid” to “none” if you are having trouble sizing your arc.

Circle

The **Circle** command allows you to input circles defined by two points. The first point will be the center of the circle. The second point will be a point on the radius of the circle. The Set Line Type command should have been issued prior to this command to assure that the proper line style is used.

Key Steps

1. Center?
2. Radius?



1. **Circle: Center?** will appear in the *User Prompt* after the command is selected. Select a center point for your circle.
2. **Circle: Radius?** will appear in the *User Prompt* after the command is selected. There are two methods available for choosing a circle's radius. The first way is to just select a point on the screen. The second way is to type in the *Edit Box* field labeled "Dist" (Distance) a numeric value for the radius. What you type in the "Dist" field will be value for the diameter. So if you desire a specific radius divide the diameter by 2 and enter that value into the "Dist" field.

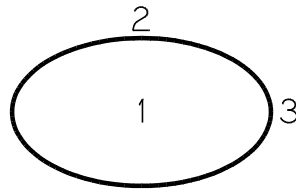
Note: The *Snap Commands* may be used to align either of these two points to an existing entity. Also, you may need to change "snap to grid" to "none" if you are having trouble sizing your circle.

Ellipse

The **Ellipse** command allows you to input an ellipse defined by three points. The first point will be the center of the ellipse. The second point will be a point on the radius one of the ellipse. The third point will be the second radius and angle of the ellipse.

Key Steps

- 1. Center?**
- 2. First radius?**
- 3. Second radius and angle?**



1. **Center** will appear in the *User Prompt* after the command is selected. Select a center point for your ellipse.

2. **First radius** will appear in the *User Prompt* after the center point is selected. Select a point for the first radius of your ellipse.

3. **Second radius and angle** will appear in the *User Prompt* after the first radius point is selected. Select a point for the second radius and angle of your ellipse.

Example: The Ellipse above illustrates the three points required to draw an ellipse.

Note: The *Snap Commands* may be used to align any of the three points of an ellipse to an existing entity.

Line

The **Line** command allows you to input a series of points that describe lines. The Set Line Type command should have been issued previous to this command to assure the proper line style is used. “Undo” backs up one vertex.

Key Steps

- 1. Start Point?**
- 2. Vertex?**
- 3. Vertex? (continue as needed or right mouse click to finish)**



- 1. Line: Start Point?** will appear in the *User Prompt* after the command is selected. Select a starting point for your line.
- 2. Line: Vertex?** will appear in the *User Prompt* after the start point is selected. Select a point for the vertex of your line. CadStd allows you to select multiple vertices to continue drawing lines without re-selecting the command.
- 3. Line: Vertex?** Continue as needed or right click your mouse to disengage the line command.

Note: The *Snap Commands* may be used to align either the start point or vertex of a line to an existing entity.

Polyline

The **Polyline** command allows you to input a series of points that describe a multiple sided (poly) line. All the segments of the line are treated as a single entity. The Set Line Type command should have been issued previous to this command to assure the proper line style is used. “Undo” backs up one vertex.

Key Steps

1. **Start Point?**
2. **Vertex?**
3. **Vertex? (continue as needed or right mouse click to finish)**



1. **Line: Start Point?** will appear in the *User Prompt* after the command is selected. Select a starting point for your line.
2. **Poly Line: Vertex?** will appear in the *User Prompt* after the start point is selected. Select a point for the vertex of your line. Proceed by selecting multiple vertices to continue your polyline.
3. **Poly Line: Vertex?** Continue as needed or right click your mouse to disengage the line command.

Note: The *Snap Commands* may be used to align either the start point or vertex of a polyline to an existing entity.

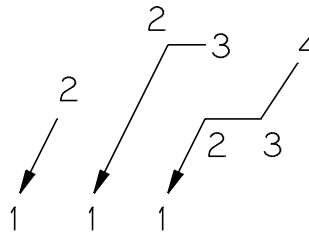
Arrow

Arrow command is used to point to details for call-outs or labeling. CadStd makes using an arrow very easy. To control the arrow style use the **Dimension Settings** **Leader Arrow Type**.

Key Steps

1. **Start Point?**
2. **Vertex?**
3. **Right Click.**

EXAMPLE



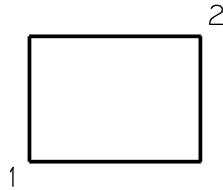
1. **Arrow: Start Point?** will appear in the *User Prompt* after the command is selected. Select the vertex for your arrow.
2. Once the **Vertex** is selected, the arrow appears. Now select the distance for the line attached to the arrow. CadStd allows you to create multiple vertices using the arrow command.
3. **Right click** when you are finished adding vertices using your right mouse button to disengage the arrow command.

Rectangle

The **Rectangle** command is simply an extension of the line command that allows you to draw boxes while only entering two points. SEE ALSO: Draw Line & Set Line Type

Key Steps

- 1. Start Corner?**
- 2. End Corner?**



- 1. Rectangle: Start Corner?** will appear in the *User Prompt* after the command is selected. Select a starting point for your rectangle.
- 2. Rectangle: End Corner?** will appear in the *User Prompt* after the first corner is selected. Select the end corner and right click your mouse to end the command. If you don't right click your mouse you can continue using the rectangle command without reselecting it.

Note: CadStd allows you to size a rectangle using the “X Y Edit Boxes”. In the X field type a dimension and press return. Then in the Y coordinate type a dimension and press return.

Dimension Commands

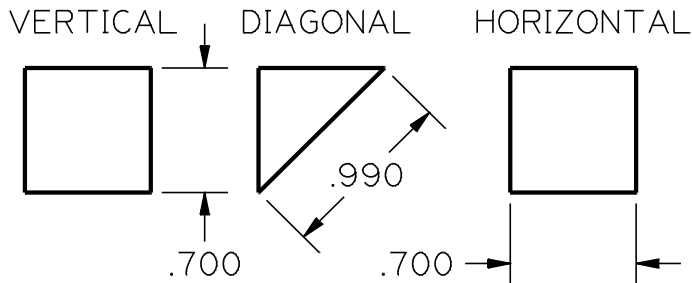
The **Dimension** commands permits the input of **horizontal**, **vertical** and **diagonal dimensioning**. The text dimension distances are recalculated with every change. Use the Set Dimension command to specify the number of decimal places displayed with the dimension text.

Key Steps

- 1. First Point?**
- 2. Second Point?**
- 3. Text Location.**



1. Select **First Point** of desired dimension.
2. Select **Second Point** of desired dimension.
3. Select **Text Location** by moving mouse away from the entity, moving the text and clicking on the desired location.



Dimension Radial

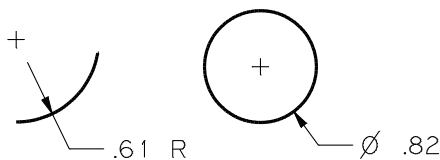
A **Radial** dimension is defined from an existing arc or circle. Choose the arc or circle you want to dimension and then place the dimension text. You can control the value of the text in the Settings/Dimension dialog box.

Key Steps

- 1. Choose Circle or Arc?**
- 2. Text Location.**



1. Once the command is engaged **Radial Dimension: Choose Circle or Arc** will appear in the *User Prompt* window. Select the circle or arc you wish to dimension.
2. After selecting the circle or arc, **Radial Dimension: Text Location?** will appear in the *User Prompt* window. Select the desired location for the text.



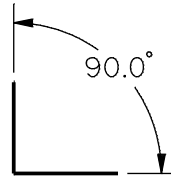
Note: The *Set Dimension* command will affect the number of decimal places displayed with the dimension text. This can be changed after **Radial Dimensions** are created.

Dimension Angular

An **Angular** dimension is defined by three points. The first is the center of the angle to be measured. The second is the start angle and location of extension line. The third is the end angle and the fourth is the text location.

Key Steps

- 1. Center?**
- 2. Start Angle?**
- 3. End Angle?**
- 4. Text Location?**



1. Once the command is engaged **Angular Dimension: Center?** will appear in the *User Prompt* window. Select the center of the angle you wish to dimension.
2. After selecting the center of the angle, **Angular Dimension: Start Angle?** will appear in the *User Prompt* window. Select the start angle location.
3. After selecting the start angle location, **Angular Dimension: End Angle?** will appear in the *User Prompt* window. Select the end angle location.
4. After selecting the end angle location, **Angular Dimension: Text Location?** will appear in the *User Prompt* window. Select the desired location for the text.

Note: The *Set Dimension* command will affect the number of decimal places displayed with the dimension text.

Text

The **Text** command allows you to input ANSI standard text at any angle. After entering the text, an X,Y location and angle are required. The Set Text Type command should have been issued previous to this command to assure the proper text size is used.

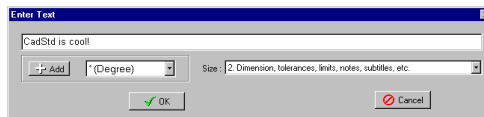
Key Steps

1. Enter Text?
2. Text Location?
3. Rotation Angle?

1. ENTER TEXT
 2 THIS IS TEXT₃



1. Once selected, a **Enter Text** box will appear on the screen, similar to the box below. Enter text into the field provided and specify appropriate size for the text. CadStd also provides the option to include the degree, plus/minus and diameter symbols in your text string. Select OK when finished.



2. **Text Location?** will now appear in the *User Prompt*. Select location for text.
3. **Rotation Angle?** will now appear in the *User Prompt*. The text will rotate with your mouse until you select your desired rotation. Once this step is completed, CadStd allows you to continue to place the same text as many times as you want in your drawing. Press Esc or right click mouse when finished

with command.

Include File

The **Include File** command permits you to insert existing drawings into your current drawing. This command is very useful and will save you time, especially if you have already drawn something and want to use it in a new drawing.

Key Steps

- 1. Select File?**
- 2. Location?**
- 3. Angle of Rotation?**



1. Once selected an **Open** box will appear on your screen. Select the appropriate file you wish to insert and then select the “Open” button. If the file is inserted in a location or angle that doesn’t work for you, there is no need to reinsert the file by using the **Include File** command. You can use the **Move** and **Rotate** commands to make the appropriate changes. You may also use the **Scale Entities** command to scale the file you inserted if necessary.
2. The text **Include File: Location?** Will now appear in the *User Prompt*. Select a location for the file to be inserted into the drawing.
3. The text **Include File: Angle of Rotation?** Will now appear in the *User Prompt*. Pick the desired angle by moving your mouse or by entering a numeric value in the “Edit Box” field “Ang”.

Note: This command inserts the complete file that already exists into the new file.

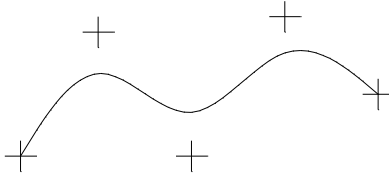
B-Spline

The **B-Spline** command allows you to input a series of points that describe a B-Spline. **A B-Spline requires at least four points.**

Undo backs up one vertex.

Key Steps

- 1. Start Point?**
- 2. Vertex?**



1. Once selected, the text **B-Spline: Start Point?** will appear in the *User Prompt*. Select the start point.
2. Once the start point is selected, the text **B-Spline: Vertex?** will appear in the *User Prompt*. Select the first vertex.
3. Once the first vertex is selected, the text **B-Spline: Vertex?** will appear again in the *User Prompt*. Select the second vertex.
4. Once the second vertex is selected, the text **B-Spline: Vertex?** will appear again in the *User Prompt*. Select the third vertex. After selecting the third vertex you can now end your B-Spline or continue to define additional vertex locations.

Chapter 5: Edit Commands

A knowledge of the various **Edit Commands** will speed up your drawing time and enhance the accuracy of your drawing. As you become familiar with the commands you will find which ones work best for you and will begin to use the commands in increasingly more advanced ways.

This chapter will familiarize you with the basic steps of execution of the CadStd Edit Commands. The methods described will provide you with the basics to perform desired editing operations. The following chapter will provide you with a reference when using the Edit Commands.

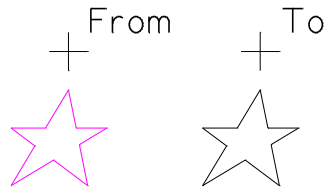
- Copy
- Move
- Delete
- Simplify
- Rotate
- Mirror X
- Mirror Y
- Scale Entities
- Array Rectangular
- Array Polar
- Change Text
- Change Text Type
- Change Line Type
- Change Layer
- Change Entity
- Intercept
- Join Lines
- Trim
- Gap
- Offset
- Fillet
- Chamfer
- Replace Text
- Project
- Copy Clipboard

Copy

The **Copy** command lets you copy elements from one point in 2D space to another. The command is very useful, especially if you've drawn an object that will be used more than once.

Key Steps

1. **Select Entities?**
2. **From?**
3. **To?**



1. The text **Copy: Select Entities** will appear in the *User Prompt*. Select all the entities you wish to copy. Right click your mouse after selecting entities to register your selection and to precede.
2. The text **Copy: From?** will appear in the *User Prompt*. Select a point.
3. The text **Copy: To?** will appear in the *User Prompt*. Select a point.

Note: When using **Copy**, the snap menu is active allowing you the option to precisely pick the point of **Copy: From** and the point of **Copy: To?**

Move

The **Move** command lets you move elements from one point in 2D space to another. Moving elements in a drawing is very common.

Key Steps

- 1. Select Entities?**
- 2. From?**
- 3. To?**



1. The text **Move: Select Entities** will appear in the *User Prompt*. Select all the entities you wish to copy. Right click your mouse after selecting entities to register your selection and to proceed.
2. The text **Move: From?** will appear in the *User Prompt*. Select a point.
3. The text **Move: To?** will appear in the *User Prompt*. Select a point.

Note: When using **Move**, the snap menu is active allowing you the option to precisely pick the point of **Move: From**, and the point of **Move: To?**

Delete

The **Delete** command lets you delete one or many elements. If you accidentally delete something use the Undo command to restore it.

Key Steps

- 1. Select Entities?**
- 2. Right Mouse Click.**



1. The text **Delete: Select Entities** will appear in the *User Prompt*. Select all the entities you wish to Delete.
2. Right click your mouse after selecting entities to register your selection. The entities will automatically be removed.

Note: By dragging a box with your mouse to the right, any entity the box touches will be selected. By dragging a box with your mouse to the left will *Unselect* any actively selected entity that the box touches. You may also click on an entity to *Select* or *Unselect* that entity.

Simplify

The **Simplify** command lets you simplify (explode/smash) an element. For example if you simplify a dimension, each element will become its simplest form: two lines, two arrows and one text element.

Key Steps

- 1. Select Entities?**
- 2. Right Mouse Click.**



1. The text **Simplify: Select Entities** will appear in the *User Prompt*. Select the entities you wish to simplify.
2. Right mouse click after selecting entities to register your selection.

Note: By dragging a box with your mouse to the right, any entity the box touches will be selected. By dragging a box with your mouse to the left will *Unselect* any actively selected entity that the box touches. You may also click on an entity to *Select* or *Unselect* that entity.

Rotate

The **Rotate** command lets you rotate elements at any angle about any point in 2D space.

Key Steps

- 1. Select Entities?**
- 2. Center of Rotation?**
- 3. Angle of Rotation?**



1. Once activated, you will see **Rotate: Select Entities** in the *User Prompt*. Select the entity or entities you want to rotate. Once selected, right mouse click to register your selection and to proceed.
2. **Rotate: Center Of Rotation?** will now appear in the *User Prompt*. Choose a point to rotate about (think of the selected entities as being on a transparent sheet and this point is a thumb-tack through to the paper below).
3. **Rotate: Angle Of Rotation?** will now appear in the *User Prompt*. Enter an angle. Just type the angle in the "Ang" entry box and press ENTER, or use the mouse to indicate the angle.

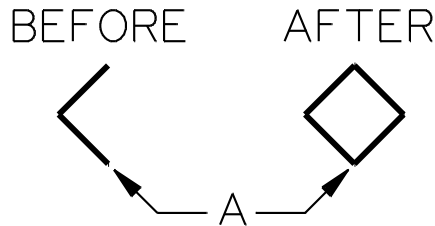
Note: A positive number entered in the “Ang” field will rotate your entity counter clockwise. A negative number will rotate your entity clockwise.

Mirror X

The **Mirror X** command lets you mirror elements in the X axis (horizontal). Like “Mirror Y”, this is a helpful command if the entity you are drawing is symmetrical. You can draw half and mirror the other half.

Key Steps

- 1. Select Entities?**
- 2. Point?**
- 3. Copy While Mirroring?**



1. The text **Mirror X: Select Entities** will appear in the *User Prompt*. Select all the entities you wish to mirror. Right mouse click after selecting entities to register your selection and to proceed.
2. The text **Mirror X: Point?** will appear in the *User Prompt*. Select a point. To create the diamond above, select “Snap to End” from the *Snap Toolbar*. Then select the end of one of the lines as illustrated in the example as End Point A.
3. CadStd will now display a “Mirror Box” asking the question, **Copy While Mirroring?** Select Yes to complete the diamond in the example. By selecting No, the entities will be mirrored on the X axis, but the original orientation of the entities will no longer exist.

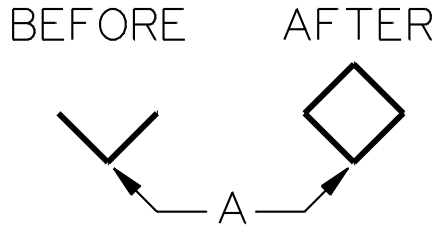
Note: When using **Mirror X** the snap menu is active allowing you the option to precisely pick the point of **Mirror X: Point?**

Mirror Y

The **Mirror Y** command lets you mirror elements in the Y axis (vertical). Like “Mirror X”, this is a helpful command if the entity you are drawing is symmetrical. You can draw half and mirror the other half.

Key Steps

- 1. Select Entities?**
- 2. Point?**
- 3. Copy While Mirroring?**



1. The text **Mirror Y: Select Entities** will appear in the *User Prompt*. Select all the entities you wish to mirror. Right mouse click after selecting entities to register your selection and to proceed.
2. The text **Mirror Y: Point?** will appear in the *User Prompt*. Select a point. To create the diamond above, select “Snap to End” from the *Snap Toolbar*. Then select the end of one of the lines as illustrated in the example as End Point A.
3. CadStd will now display a “Mirror Box” asking the question, **Copy While Mirroring?** Select Yes to complete the diamond in the example. By selecting No, the entities will be mirrored on the Y axis, but the original orientation of the entities will no longer exist.

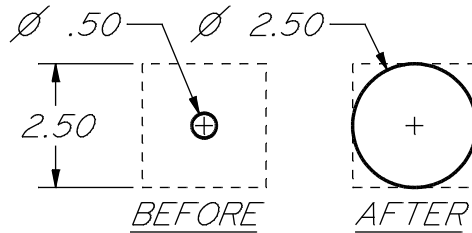
Note: When using **Mirror Y**, the snap menu is active, allowing you the option to precisely pick the point of **Mirror Y: Point?**

Scale

The **Scale** command lets you scale elements about any point in 2D space.

Key Steps

1. **Scale Value?**
2. **Select Entities?**
3. **Point ?**



1. A **CadStd: Scale** Box appears on the screen that prompts you to type a value from .001 to 100 to scale the entity by. To scale the circle above to a diameter of 2.5” that will intersect all 4 corners of the box, type 5, and select **OK**.
2. The text **Scale: Select Entities** will appear in the *User Prompt*. Select the circle and right mouse click to register your selection and to proceed.
3. The text **Scale: Point?** will appear in the *User Prompt*. Select “Snap Center” from the *Snap Toolbar*, and then select the circle. If done properly the circle will now fill the square.

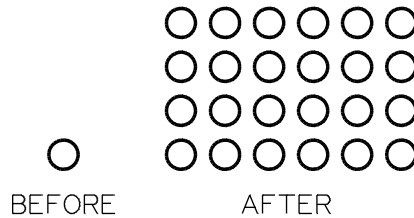
Note: When using **Scale**, the snap menu is active, allowing you the option to precisely pick the point of **Scale: Point?**

Array Rectangular

The **Array Rectangular** command lets you copy elements into rows and columns. This is a great command if you're drawing a single line schematic or wiring diagram that requires many copies of the same entity.

Key Steps

1. # Columns & # Rows?
2. Select Entities?
3. First Point?
4. Second Point?



1. A **CadStd: Array Rectangular** Box appears on the screen that prompts you to type the number of columns and rows you want to create. For the example above, enter 6 columns and 4 rows and select **OK**.
2. The text **Array Rectangular: Select Entities** will appear in the *User Prompt*. Select the circle and right mouse click to register your selection and to proceed.
3. The text **Array Rectangular: First Point?** will appear in the *User Prompt*. Select “Snap Center” from the *Snap Toolbar*, and then select the circle.
4. The text **Array Rectangular: Second Point?** will appear in the *User Prompt*. Drag your mouse to create a square. Complete the box (that represents the distance between one column and one row) you are drawing by clicking your mouse once again. The circle will now be arrayed in 6 columns and 4 rows.

Array Polar

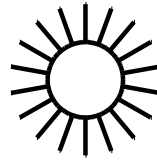
The **Array Polar** command lets you rotate and copy elements multiple times. Like “Array Rectangular”, this is a great command if your drawing requires many copies of the same entity.

Key Steps

- 1. # Copies & Angle?**
- 2. Select Entities?**
- 3. Center of Rotation?**



BEFORE



AFTER



1. A **CadStd: Array Polar** Box appears on the screen that prompts you to type the number of copies and the angle of rotation. For the example above, enter 17 copies and an angle of 20 degrees and select **OK**.
2. The text **Array Polar: Select Entities** will appear in the *User Prompt*. Select the line and right mouse click to register your selection and to proceed.
3. The text **Center of Rotation?** will appear in the *User Prompt*. Select “Snap Center” from the *Snap Toolbar*, and then select the circle. The line should array 17 additional times, 20 degrees apart from each other around the circle.

Change Text

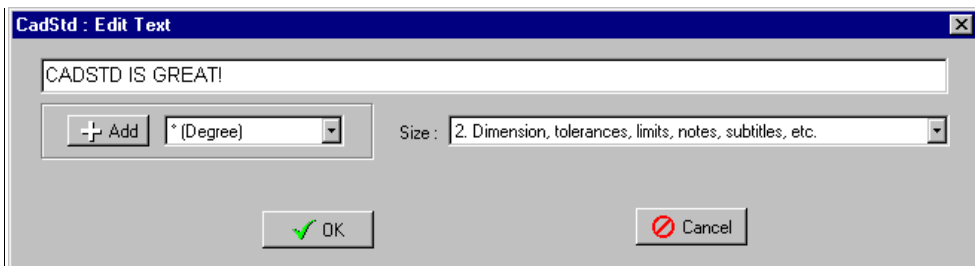
The **Change Text** command lets you edit the text string of any text element.

Key Steps

- 1. Select Entities?**
- 2. Edit Text Box**



1. The text **Change Text: Select Entities** will appear in the *User Prompt*. Select the text entity you desire to change.
2. A **CadStd: Edit Text** box similar to the example below will appear on your screen. Make the necessary changes and select OK.



Change Text Type

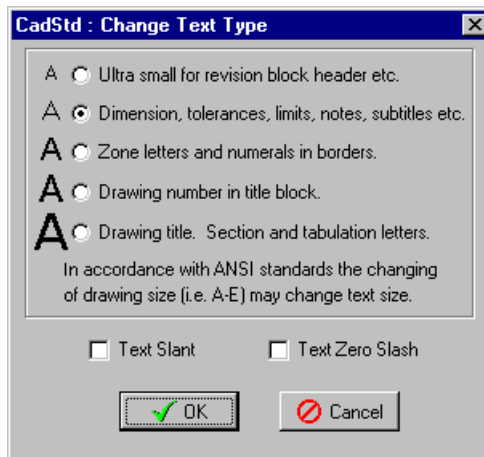
The **Change Text Type** command lets you change the type and size of any text element.

Key Steps

- 1. Select Entities?**
- 2. Change Text Type Box**



1. The text **Change Text Type: Select Entities** will appear in the *User Prompt*. Select the text entities you desire to change and right mouse click to register your selection.
2. A **CadStd: Change Text Type** box similar to the example below will appear on your screen. Make the change and select OK.



Change Line Type

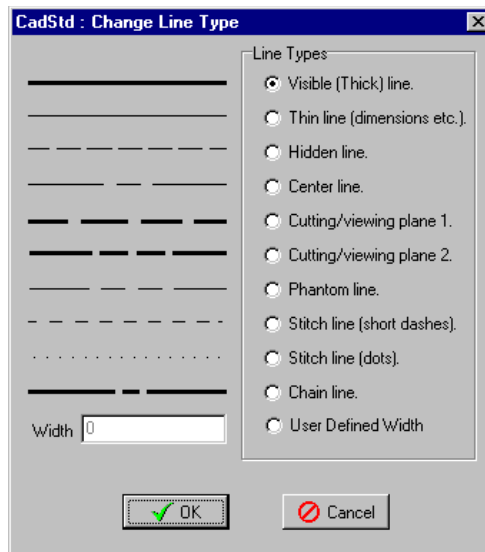
The **Change Line Type** command lets you change the line type of any line element.

Key Steps

1. **Select Entities?**
2. **Change Line Type Box**



1. The text **Change Line Type: Select Entities** will appear in the *User Prompt*. Select the entities you desire to change.
2. A **CadStd: Change Line Type** box similar to the example below will appear on your screen. Make the change and select OK.



Change Layer

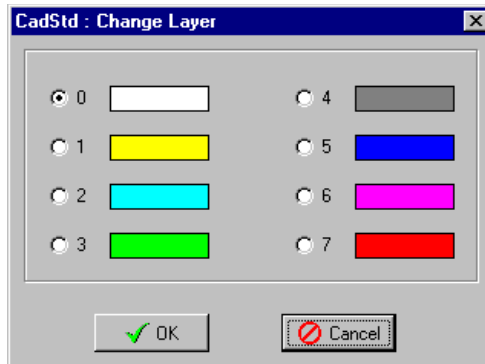
The **Change Layer** command lets you change the layer of any entity. This command was changed in version 3.5 and subsequent releases to prompt you for the specific layer after the right mouse button is clicked.

Key Steps

- 1. Select Entities?**
- 2. Change Layer Box**



1. The text **Change Layer: Select Entities** will appear in the *User Prompt*. Select the entities you want to change to a different layer.
2. A **CadStd: Change Layer** box similar to the example below will appear on your screen. Make the change and select OK.



Change Entity

The **Change Entity** command allows you to modify or alter an existing entity.

Key Steps

- 1. Select Entities?**
- 2. Vertex? From?**



- 1. Change Entity: Select Entity?** in the *User Prompt*. Select the entity or entities you want to change.
- 2. Change Entity: Vertex? From?** Select either the triangle on the entity or the squares on the ends of the entity by left mouse clicking on them and dragging them to a desired location. Left mouse click again to complete the move.

Intercept

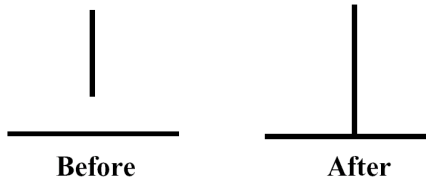
The **Intercept** command lets you extend a line or arc to the intercept point of another line or arc.

Key Steps

- 1. Select Entities?**
- 2. Entity to Modify?**



- 1. Intercept: Select Entities?** will appear in the *User Prompt*. Left mouse click on the line or arc that will be intercepted. In the example below, select the horizontal line.
- 2. Intercept: Entity to Modify?** will appear in the *User Prompt*. Left mouse click on the line or entity to complete the command. In the example below, select the vertical line. The vertical line will automatically be extended to intercept the horizontal line.



Join Lines

The **Join Lines** command lets you combine two lines or polylines into a single polyline.

Key Steps

- 1. Choose First Line?**
- 2. Choose Second Line?**



- 1. Join: First Line or Polyline?** will appear in the *User Prompt*. Left mouse click on the first line.
- 2. Join: Second Line or PolyLine?** will appear in the *User Prompt*. Left mouse click on a second line that you would like to join to the first line to complete the command.

Trim

The **Trim** command allows you trim a line or an arc to the intersection of another line or arc.

Key Steps

- 1. Select Entities?**
- 2. Entity to Modify?**



- 1. Trim: Select Entities?** Will appear in the *User Prompt*.
Select an intersecting entity that will define a trim boundary. In the examples below, select either the circle in fig.1, or the horizontal line in fig.2.

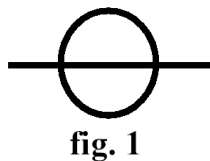


fig. 1

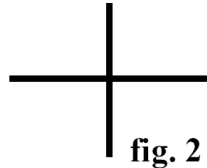


fig. 2

- 2. Trim: Entity to Modify?** Now appears in the *User Prompt*.
Select the entity to be trimmed by left mouse clicking it. In the example below, select the middle of the line in fig. 1, or the lower portion of the vertical line in fig.2. Upon being selected the entity will automatically disappear.

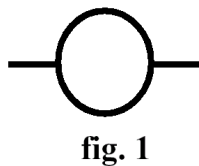


fig. 1

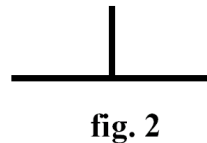


fig. 2

Gap

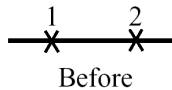
The **Gap** command lets you a create a gap within an arc or line.

Key Steps

1. **First Point?**
2. **Second Point?**



1. **Gap Entity: First Point?** Will appear in the *User Prompt*. Select the first point by left mouse clicking on it.
2. **Gap Entity: Second Point?** Now appears in the *User Prompt*. Select the second point by left mouse clicking it. The segment of the entity between the selected points will automatically disappear.



Offset

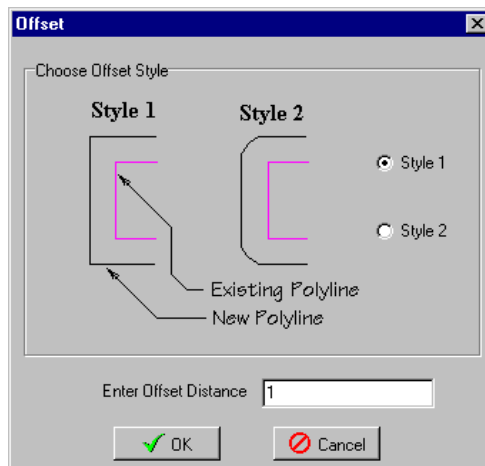
The **Offset** command lets you precisely offset existing lines or entities. This command eliminates the steps of redrawing the lines or entities that you wish to offset.

Key Steps

1. **Style & Distance**
2. **Select Entity**
3. **Direction?**



1. Pick either Style 1 or Style 2 and enter the offset distance in the **Offset** box that appears on the screen once the command is engaged.
2. **Select Entity** appears in the *User Prompt*. Select the entity to offset by left mouse clicking it.
3. **Direction** will now appear in the *User Prompt*. Pick the direction to offset by a single left mouse click on the screen.



Fillet

Fillet allows you to conveniently round corners to a specific radius.

Key Steps

- 1. Fillet Radius?**
- 2. Choose Line 1?**
- 3. Choose Line 2?**



1. The **CadStd: Fillet** box will appear on your screen. Within the box is a detailed example and a field for you to type a specific radius. Type in the **Fillet Radius** you desire and select the **OK** button.
2. The text **Fillet: Choose Line 1** now appears in the *User Prompt*. Select line 1.
3. The text **Fillet: Choose Line 2** now appears in the *User Prompt*. Select line 2 and the radius will automatically appear.



Chamfer

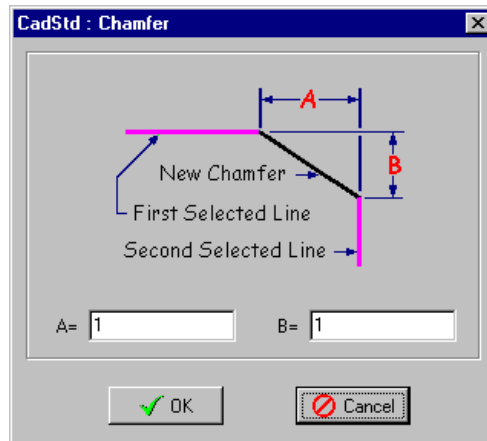
Chamfer is similar to the “Fillet” command. The difference is that Chamfer cuts the corner with a straight line rather than rounding it. With Chamfer you specify the distance from the corner rather than a radius.

Key Steps

- 1. Enter A & B?**
- 2. Choose Line 1?**
- 3. Choose Line 2?**



1. The **CadStd: Chamfer** box will appear on your screen. Within the box is an example detailing first and second lines and what dimension A and B represent. Type the dimension for A and B in the appropriate field and select the OK button.
2. Once the OK button is selected, the text **Chamfer: Choose Line 1** will appear in the *User Prompt*. Select line 1.



3. **Chamfer: Choose Line 2** will appear in the *User Prompt*. Select line 2 and the corner intersection will automatically change.

Replace Text

Replace Text is used to do a global search and replace from values that you enter or (for advanced users) from a tab delimited file in the form of {From String}<TAB>{To String}.

Key Steps

- 1. Search For:**
- 2. Replace With :**
- 3. Choose Options**
- 4. Press OK.**



1. Once the command is selected a **Search and replace text** box similar to the example below will appear on the screen.
2. Specify the criteria for your search in the fields available on the box and select OK.

Search and replace text

☒ Enter Text Values Manually

Search for: CadStd Lite + Add ▼

Replace with: CadStd Pro + Add ▼

☐ Search and replace text from a tab delimited file.

Browse...

Scope

☒ Global
☐ Selected

Options

☒ Match entire string
☒ Case sensitive

✓ OK ✗ Cancel

Project

The Project command allows you the ability to make a 2D entity into an Isometric, Cavalier, or Cabinet projection.



1. Select your intended projection type and select the OK button.

Key Steps

- 1. Select Projection Type**
- 2. Select Entities**
- 3. From?**
- 4. To?**

2. **Project (Ortho to Grid Setting): Select Entities** will now appear in the *User Prompt*. Select the entities you wish to project and then right click your mouse to register your selection and to proceed.
3. **Project (Ortho to Grid Setting): From** will now appear in the *User Prompt*. Select to point on the drawing where you'd like to project from.
4. **Project (Ortho to Grid Setting): To** will now appear in the *User Prompt*. Select where you'd like the entity to be projected to.

Note: Refer to **Lesson 5** in the **Tutorial** for more information about “Creating Isometric Projections”.

Copy Clipboard

The **Copy Clipboard** command lets you copy the display area into the Windows copy buffer. This is useful if you would like to use a part of your image in a Word, WordPerfect or Paintbrush program. CadStd gives you three formats to choose from when copying entities to the clipboard.

Key Steps

- 1. Choose the Raster, Vector or Whole Window option.**

A **Raster** image is made up of pixels and is resolution-dependent. Paint programs such as Photoshop and PaintShop use Raster images.

A **Vector Enhanced Meta File (EMF)** image is made up of lines and curves that are defined mathematically in the computer. A Vector image is resolution independent. This is the best choice for resizable figures in word processors. Word processing programs such as StarOffice, Word, WordPerfect, PowerPoint, Illustrator, Freehand and CorelDraw can work with vectors EMF files.

Whole Window copies everything that appears in the CadStd window. This includes the visible drawing space and all of the surrounding menu items and toolbars on CadStd's main screen. This is similar to using the Print Screen feature in Windows.

Note: When copying **Raster** or **Vector** images you can zoom in on an entity to copy it and to exclude any other entities in your drawing that you don't want copied.

Chapter 6: Tutorial

The Tutorial is broken into six lessons of varying degree of difficulty. Each lesson builds on the previous one and walks you step-by-step through the commands and functions of CadStd. The lessons in the tutorial will provide you with a working understanding of CadStd and will acquaint you with the fundamentals of creating your own drawings using CadStd.

Table of Contents

CadStd Tutorial

Lesson 1: My First CadStd Drawing

Lesson 2: Creating A Drawing Template For Use In Other Drawings

Lesson 3: Using Templates In A Drawing

Lesson 4: Using The Offset, Gap, Trim and Intercept Functions

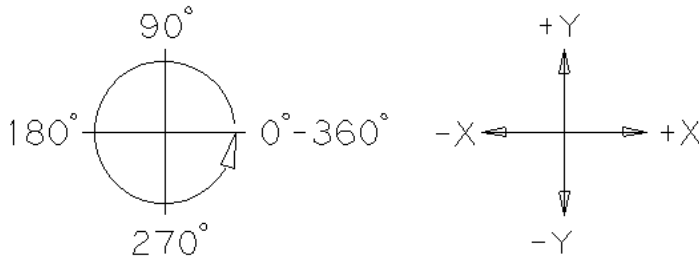
Lesson 5: Creating Isometric Projections

Lesson 6: Creating Family History Wall Charts

Lesson 1: My First CadStd Drawing

Introduction. The best way to learn CadStd is by using it. Before we begin we need to know a few basic concepts:

- Angles and coordinates are oriented like this :

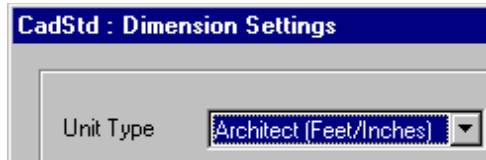


- The left mouse button is for selecting required locations or angles.
- The right mouse button is for completing repetitive commands or repeating the previous command.
-  is for zooming in on an area (Window / Zoom Window).
-  is for seeing the whole paper area (Window / Zoom All).
- P1 , P2, P3 found in this tutorial represent Point 1, Point 2 and Point 3.

Begin your drawing by setting up a few things:

1. Select the icon that looks like  (Or from the main menu select **Settings/Dimension**)

2. Set the Unit Type to **Architect Feet & Inches**

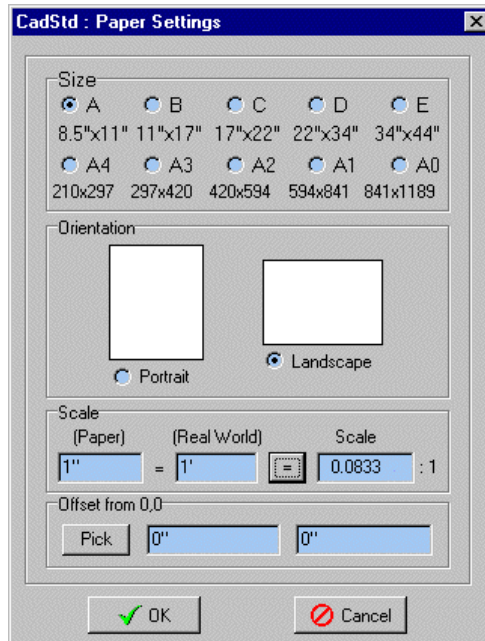


Then press OK.

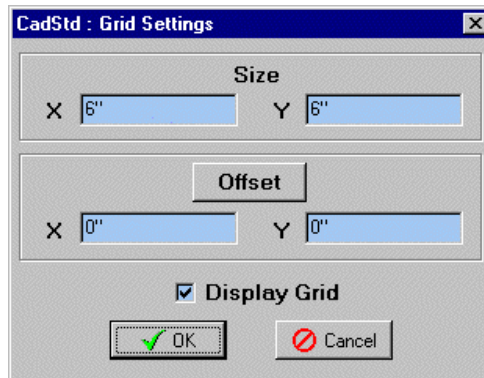
3. Select the icon that looks like  (Or use the main menu and select **Settings/Paper..**)

Chapter 6: Tutorial

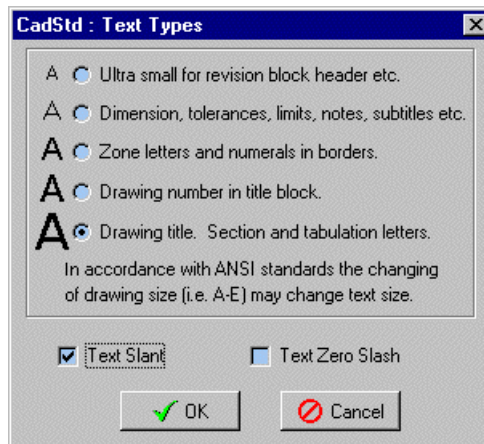
4. Set the paper size and scale. Set the Size to **A** and the Orientation to **Landscape**. Set the scale by typing **1"** (one inch) in the Paper box and **1'** (one foot) in the Real World box, then press the = (equal) button or press Tab. When you are finished press OK.



5. Set the Grid Size and Offset. Select the icon that looks like  (Or use the main menu and select **Settings/Grid**). Set the X Size to **6"** (six inches) and the Y Size to **6"** (six inches). Set the X Offset to **0** (zero) and Y Offset to **0** (zero). When you are finished press OK.



6. Set the **Text Type** by selecting the icon that looks like this  (Or use the **Settings/Text** menu) then choosing the "Drawing title" radio button. In addition make sure the **Text Slant** is checked. When you are finished press OK.

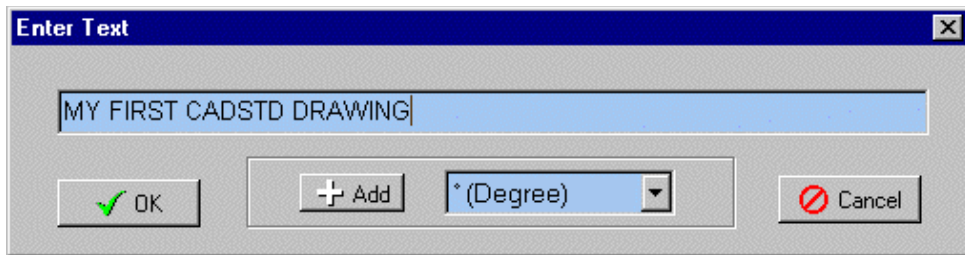


Chapter 6: Tutorial

7. Save your settings by using the icon that looks like  (or use **File/Save Settings** on the menu).

Note: After you save your settings CadStd will use these settings each time you start a new drawing.

Now that we have our drawing parameters set we can begin drawing. First look at the whole drawing by doing a **Window/Zoom All**, or pressing the  icon.



8. Start Drawing text by selecting the **Draw/Text** icon  Enter the text for the title of the drawing and press OK.

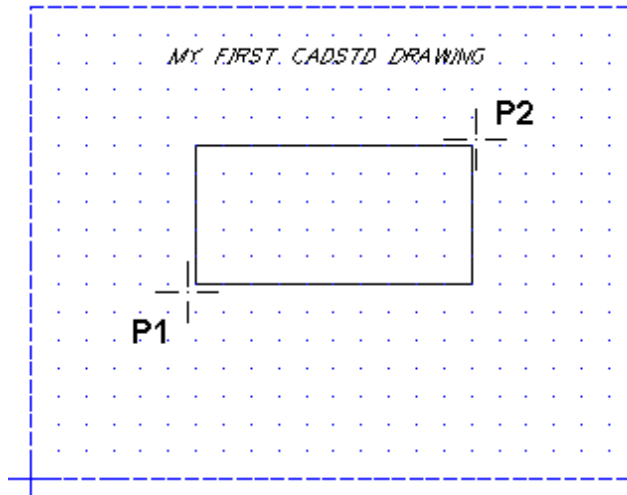
9. Place location of the text somewhere in the upper left corner of the drawing by using your left mouse button. CadStd will then prompt you for a **Rotation Angle**. Watch the value (A=) at the bottom of the CadStd window.



When you pause at a location, the angle is shown relative to your previous X,Y location. Press the left mouse button when the angle reads zero (**A=0.0**).



10. Start drawing a table by using the **Rectangle** icon  (or use the menu **Draw/Rectangle**). Start at the lower left corner (Location P1)...



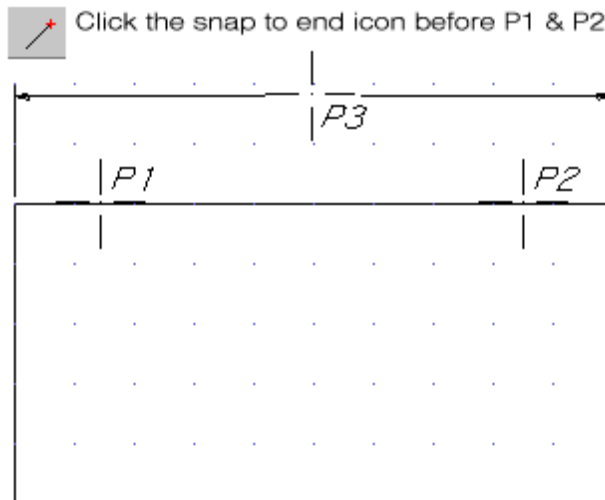
After selecting the first point watch the status bar. See if you can match these values. When you do, select the second point (P2).



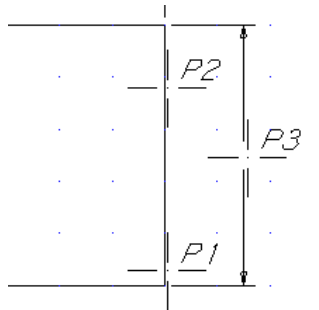
Chapter 6: Tutorial

11. Start drawing a Horizontal Dimension by selecting the icon  (or from the menu do **Draw/Dimension/Horizontal**).

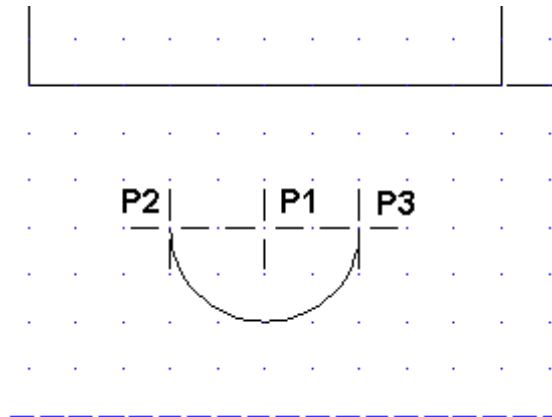
Next, select points in the same order and location of (P1,P2,P3) as shown below, using the snap end icon before (P1 and P2).



12. Start drawing a **Vertical Dimension** by selecting the icon  (or from the menu do **Draw/Dimension/Vertical**). Next, select points in the same order and location (**P1,P2,P3**) as shown below, using the snap end icon before (P1 and P2).

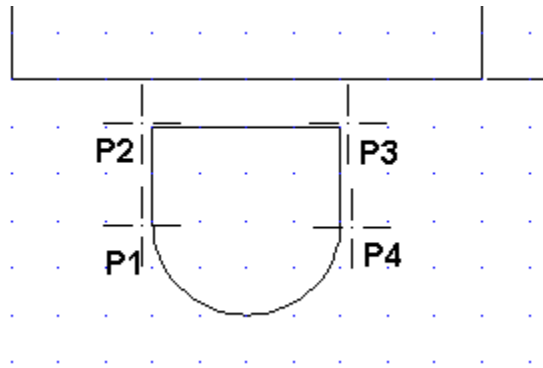


13. Next start drawing a chair. Start drawing an **Arc** by using this icon  (or by using **Draw/Arc(Cen,Sa,Ep)** on the menu). **P1** will be the Center, **P2** the Start Angle for the arc and **P3** the End Point.

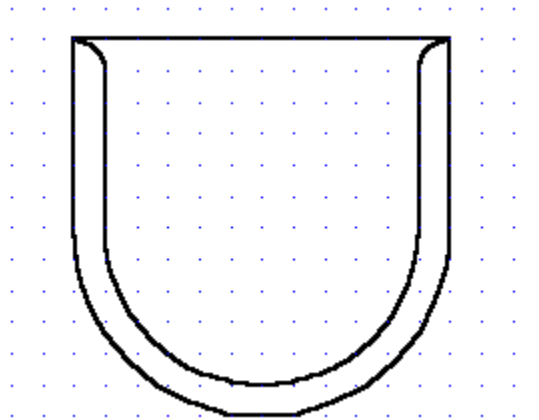


Chapter 6: Tutorial

14. Start drawing the rest of the chair by drawing a **Polyline**. Use this  icon or from the menu do **Draw/Poly Line**.

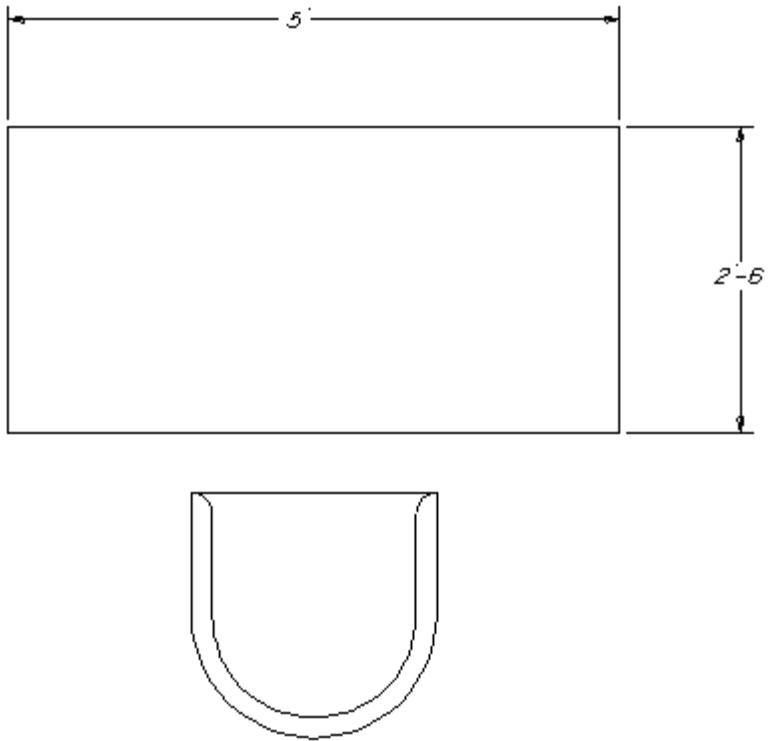


15. You should know enough to finish the chair without more help. Set the grid to 2" (see step 5) and see if you can finish the chair yourself.



16. Your finished drawing should look something like this..

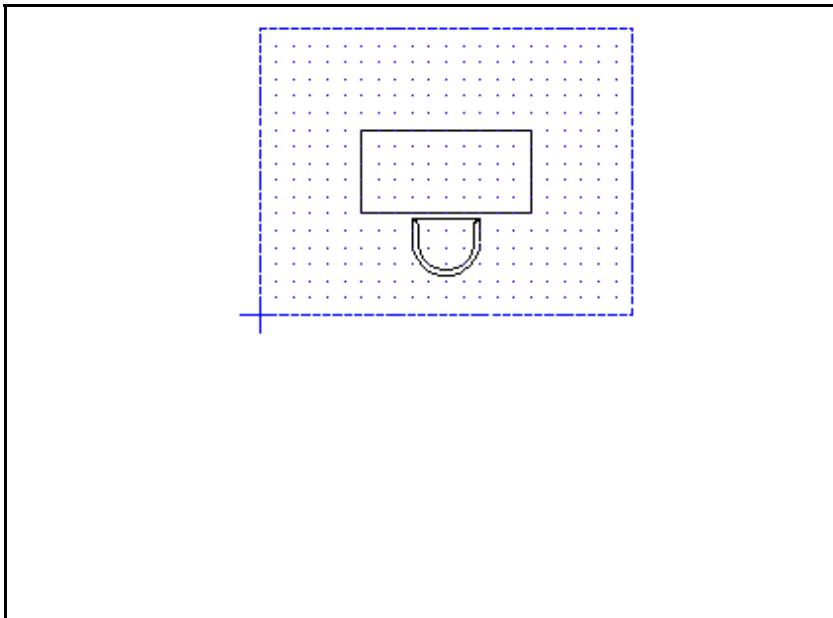
MY FIRST CADSTD DRAWING



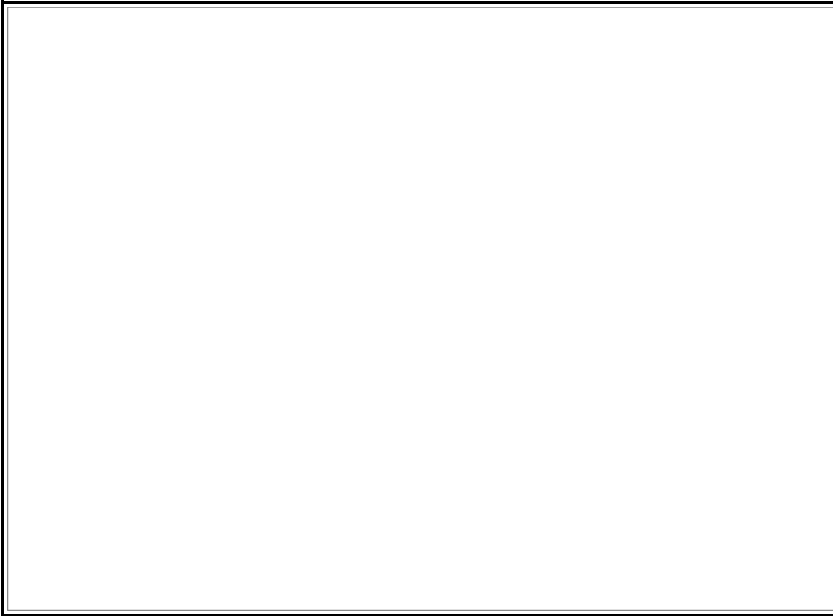
17. Save your drawing as **myfirst.cad** by using the icon that looks like  (or use **File/Save As** on the menu).

Lesson 2: Creating A Drawing Template For Use In Other Drawings

1. Open the drawing **myfirst.cad** that you created in the first chapter by using the icon that looks like  (or use **File/Open** in the main menu).
2. Delete the title and the dimensions by using the icon (in the **Edit Options** section) that looks like  (or use **Edit/Delete** in the main menu).
3. **Zoom Out**  and **Center the Window**  as shown.

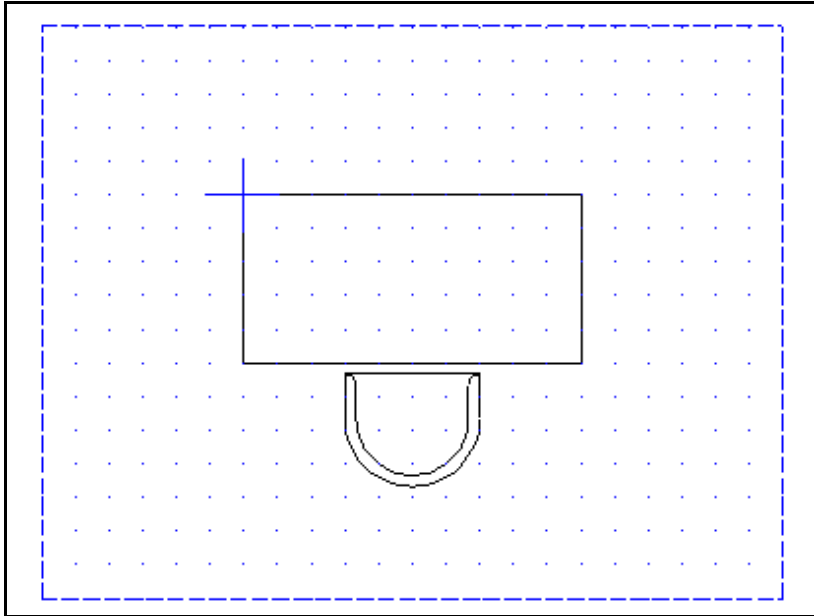


4. Choose **Select/All** (from the main menu), then **Move**  the entities from the upper left corner of the desk to the lower left corner of the paper at 0,0 by choosing **Snap End Icon**  - then click near the upper left corner of the desk. Next click on the paper corner. End by doing **Unselect/All**.



Chapter 6: Tutorial

5. In **Paper Settings**, pick a new "**Offset from 0,0**". Click on the pick button and then center the paper around the desk. After picking a new paper origin, do a **Zoom/All**. Your finished drawing should look something like this:



6. Save your drawing as **desk.cad** by using the icon that looks like  (or use **File/Save As** on the menu).

Lesson 3: Using A Template In A Drawing

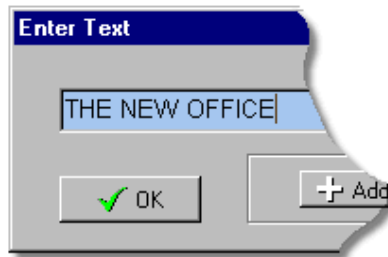
1. If you have an existing drawing open save it and do a **File/New** command.
2. Select the icon that looks like  (Or use the main menu and select **Settings/Paper..**)
3. Set the paper scale to 1" = 2' then press the equal sign button.



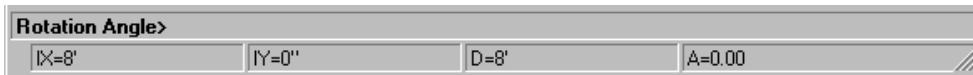
4. Set the text size to **Drawing Title** size by doing a **Settings/Text** or pressing the  icon.
5. Look at the whole drawing by doing a **Window / Zoom All** or pressing the  icon.

Chapter 6: Tutorial

6. Start Drawing text by selecting the **Draw/Text** icon  Enter the text for the title of the drawing and press OK.



7. Place location of the text somewhere near the top center of the drawing by using your left mouse button. CadStd will then prompt you for a **Rotation Angle**. Watch the value (**A=**) at the bottom of the CadStd window.

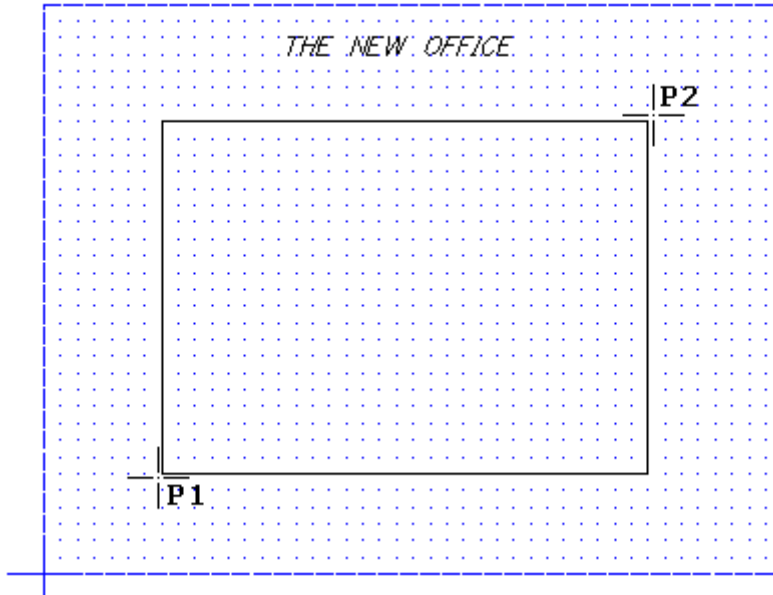


When you pause at a location, the angle is shown relative to your previous X,Y location.

Press the left mouse button when the angle reads zero (**A=0.0**).



8. Draw a rectangle by selecting the **Draw/Rectangle**  icon.

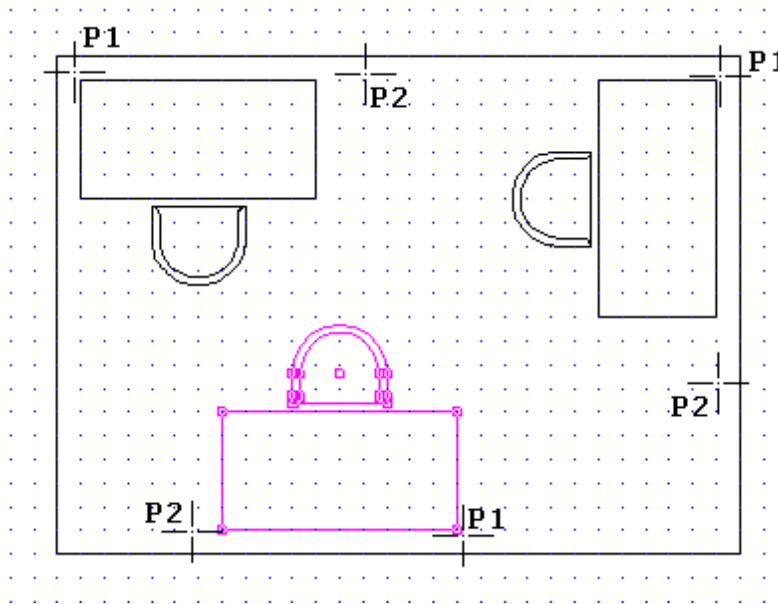


Chapter 6: Tutorial

9. Bring a desk into your drawing by using the **Draw/Include File** icon.



Repeat this process two more times to create a drawing that looks like this:



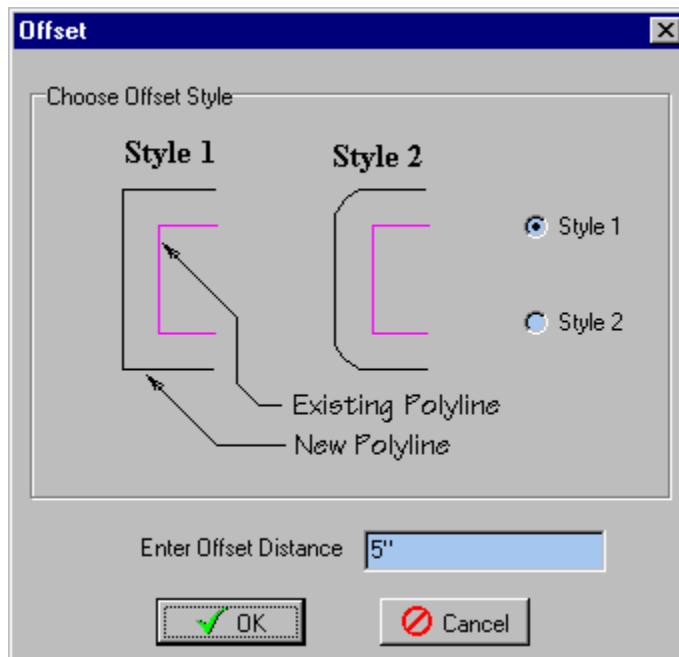
10. Unselect the remaining selected entities by doing an **Unselect/All** on the main menu.

11. Save your drawing as **office.cad** by using the icon that looks like  (or use **File/Save As** on the menu).

Lesson 4: Using The Offset, Gap, Trim And Intercept Functions

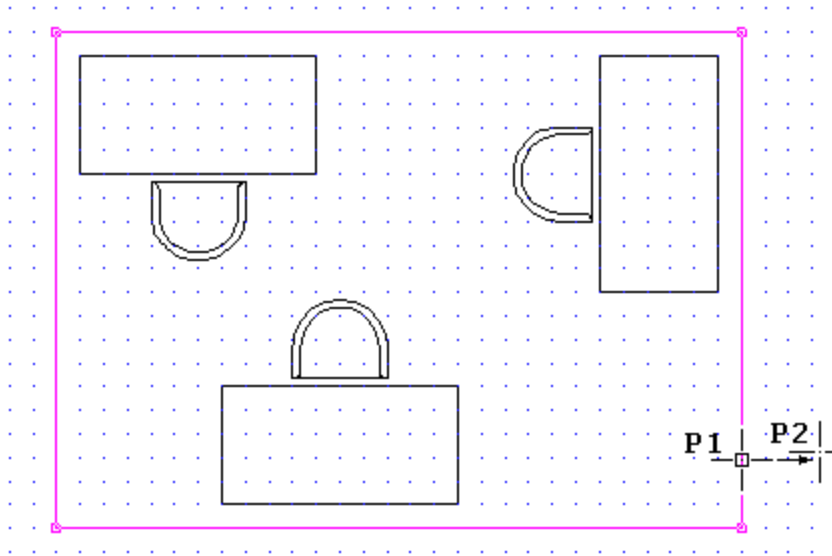
Note: These functions are only available in [CadStd Pro](#).

1. Open the drawing **office.cad** that you created in the previous chapter by using the icon that looks like  (or use **File/Open** on the menu).
2. Bring up the **Offset Dialog Box** by doing an **Edit/Offset** or use the  icon located in the **Edit Options** section. Select **Style 1** and enter an offset distance of **5"**.

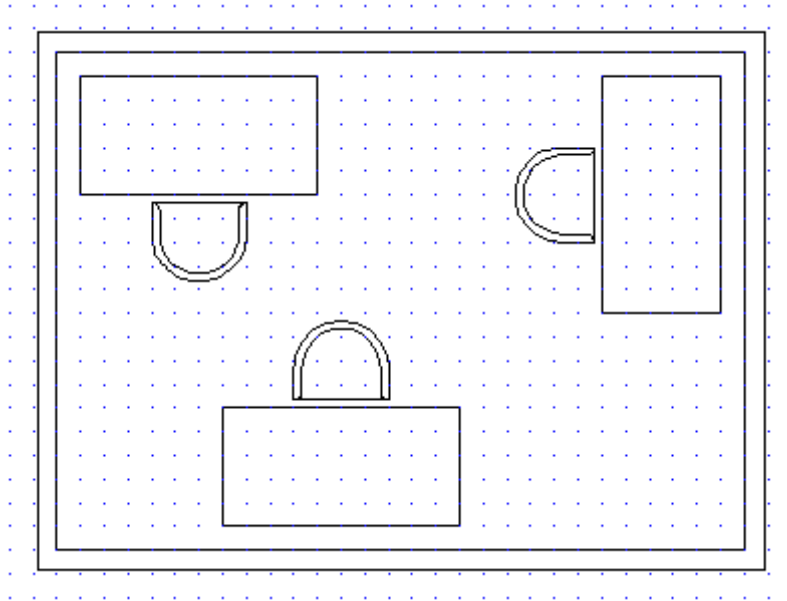


Chapter 6: Tutorial

3. Select the inner wall (**P1**) and then pick a point outside the rectangle (**P2**).

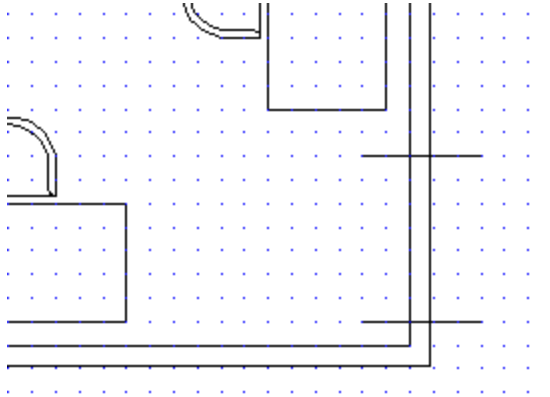


4. The result of your offset command should look like this.

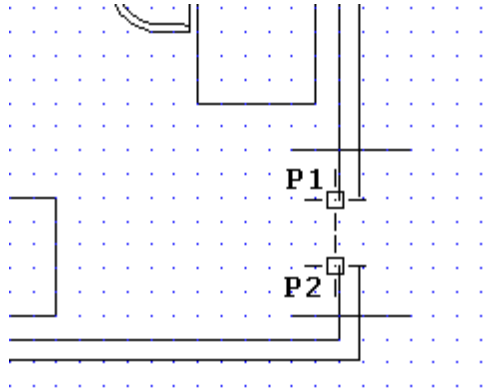


Chapter 6: Tutorial

5. Next draw two working lines approximately where shown. You might want to try drawing one line and offsetting the other a specific distance like **3'-6"**.

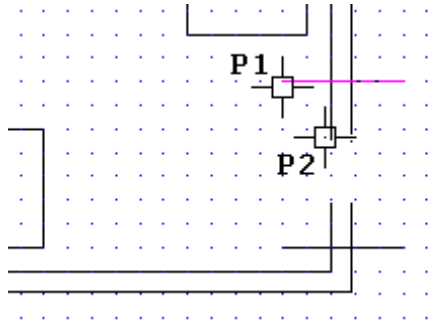


6. Use the **Edit/Gap** command from the main menu or use the icon that looks like  located in the **Edit Options** section to create small gaps in first the inner wall, as shown by points (**P1**) and (**P2**). Then do the same to the outer wall.

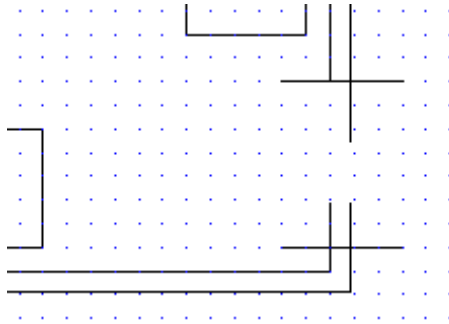


Chapter 6: Tutorial

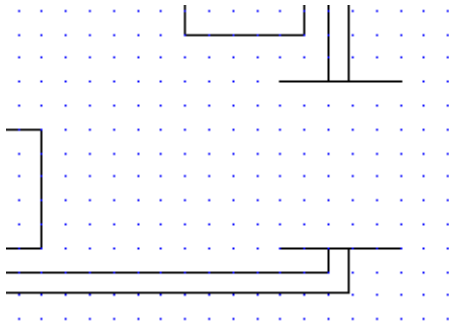
7. Use the **Edit/Trim** command from the main menu or use the icon that looks like  located in the **Edit Options** section. Select the line (**P1**) then point to the line you want to trim, in this case the inner wall line at location (**P2**).



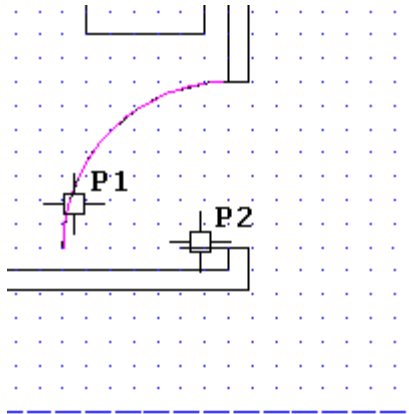
8. The result of this first trim should look like this.



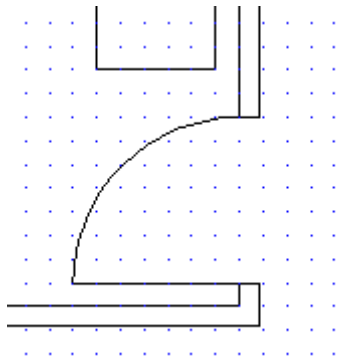
9. Continue trimming the walls back to the working lines until they look like this.



12. Using the **Edit/Intercept** command from the main menu or use the icon that looks like  located in the **Edit Options** section. Select the arc (**P1**) and then pick the protruding working line (**P2**). This will extend the line at **P2** to meet with the arc.

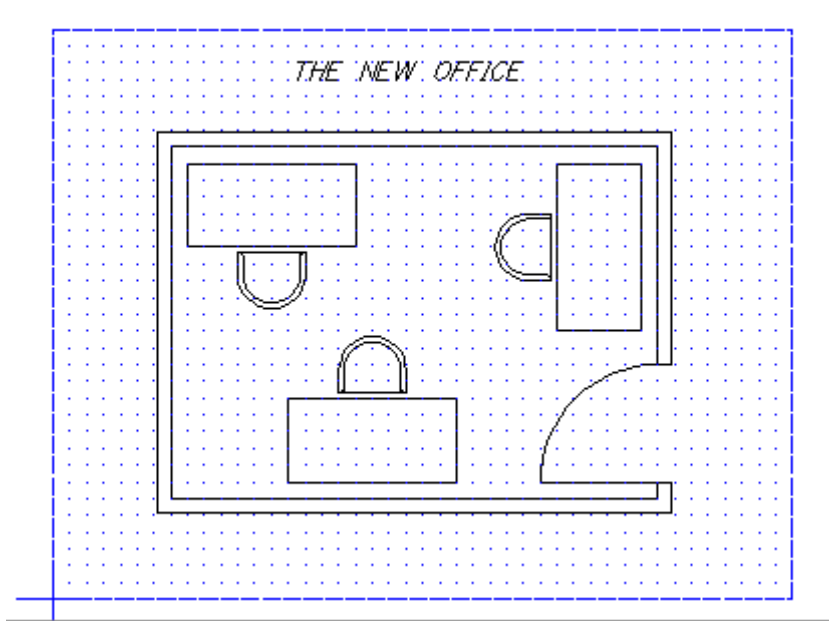


13. Your result should look like this.



Chapter 6: Tutorial

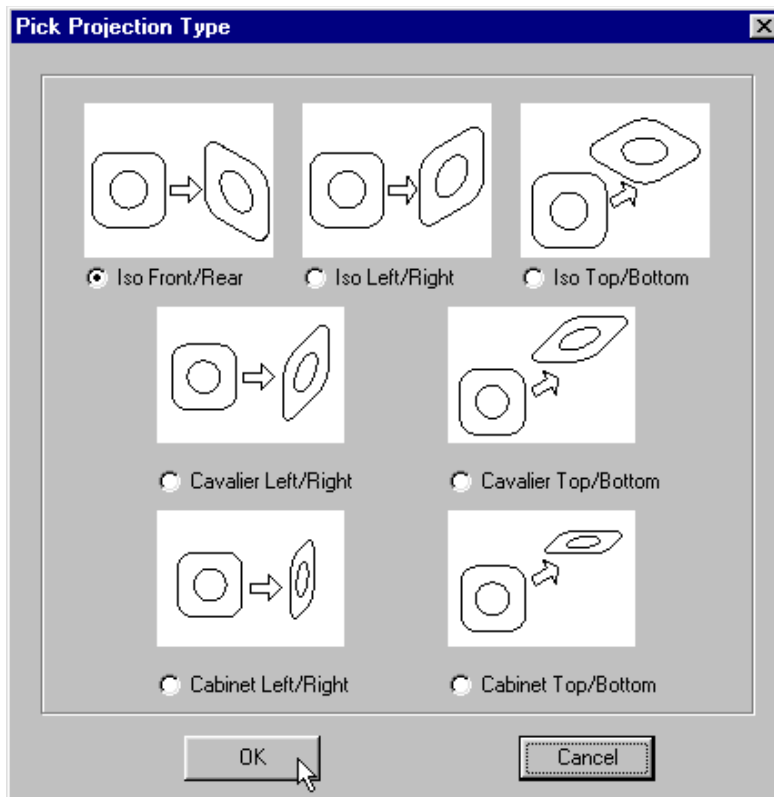
14. Finally do a **Zoom All** and look at your finished drawing.



15. Save your drawing as **office2.cad** by using the icon that looks like  (or use **File/Save As** on the menu).

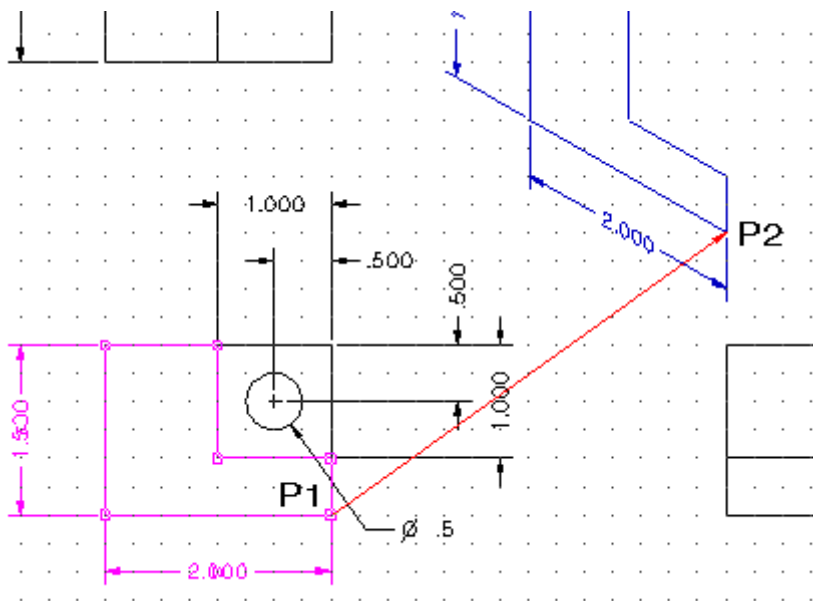
Lesson 5: Creating Isometric Projections

1. Open the drawing isostart.cad using CadStd Pro, or create an orthographic drawing from the isometric drawing shown in step 8 as part of a more challenging exercise.
2. Bring up the **Projection Dialog Box** by doing an **Edit/Project**, or use the  icon located in the **Edit Options** section. When the dialog box appears select **Iso Front/Rear** and press OK.

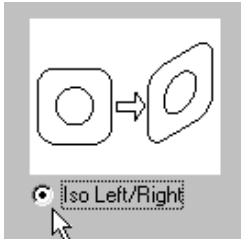


Chapter 6: Tutorial

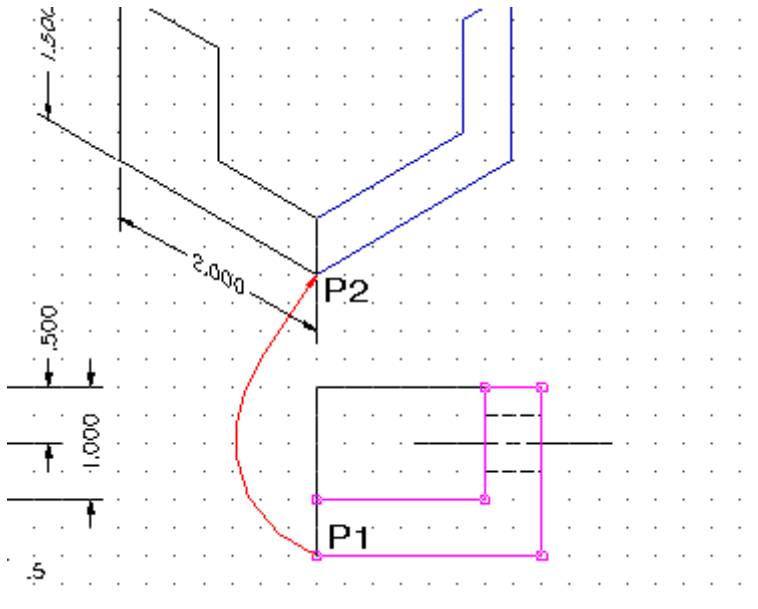
3. Select the entities that are shown and press the right mouse button. Press the left mouse button (on the grid point at the P1 end of the red arrow), followed by the point at P2 (The results are shown in blue).



4. Bring up the **Projection Dialog Box** again by using the right mouse button to repeat the last command, or by doing an **Edit/Project**, or use the icon  located in the **Edit Options** section.



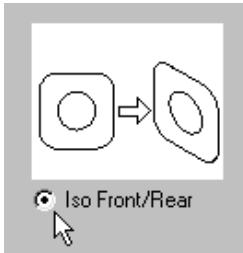
When the dialog box appears select **Iso Left/Right** and press OK. Select the entities that are shown and press the right mouse button. Press the left mouse button (on the grid point at the P1 end of the red arrow), followed by the point at P2.



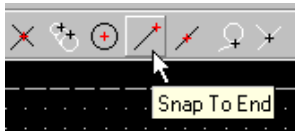
Chapter 6: Tutorial

5. Bring up the **Projection Dialog Box** again by using the right mouse button to repeat the last command, or by doing an **Edit/Project**, or use the

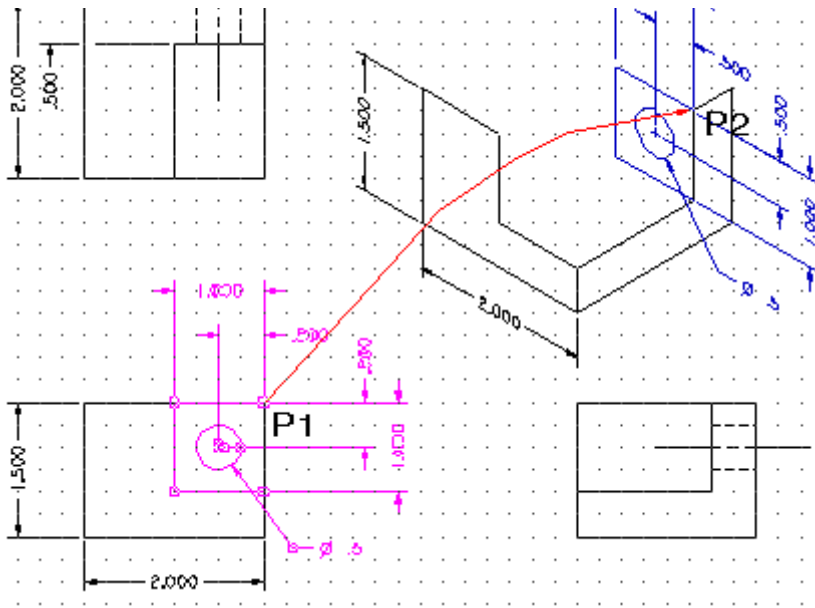
 icon located in the **Edit Options** section.



When the dialog box appears select **Iso Front/Rear** and press OK. Select the entities that are shown and press the right mouse button. Press the left mouse button (on the grid point at the P1 end of the red arrow).



Make sure to click on the snap end icon before picking the line near P2 since this end is not on grid

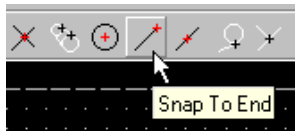


6. Bring up the **Projection Dialog Box** again by using the right mouse button to repeat the last command, or by doing an **Edit/Project** or use the

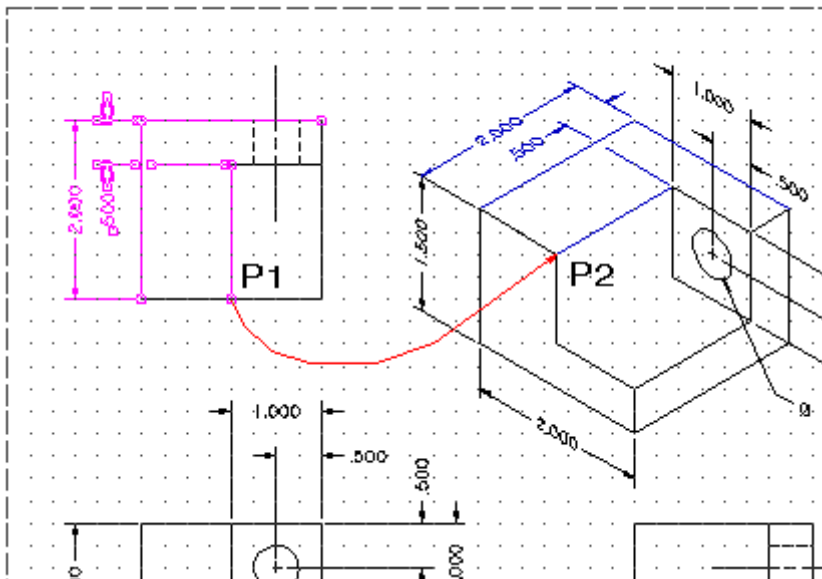
 icon located in the **Edit Options** section.



When the dialog box appears select **Iso Top/Bottom** and press OK. Select the entities that are shown and press the right mouse button. Press the left mouse button (on the grid point at the P1 end of the red arrow).



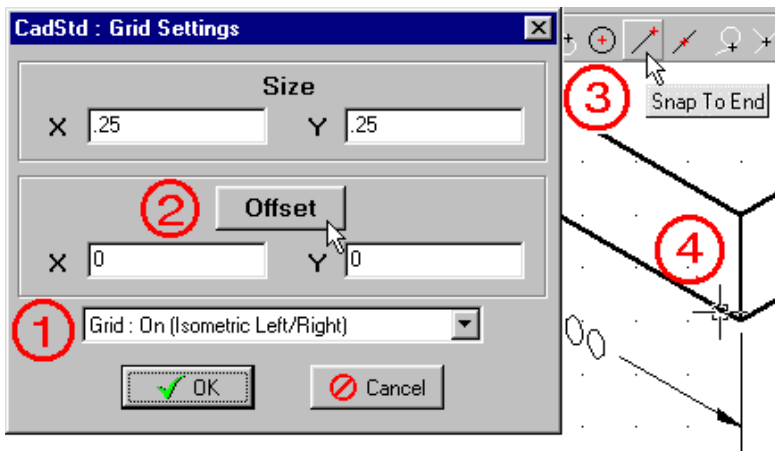
Make sure to click on the **snap end icon** before picking the line near P2 since this end is not on grid.



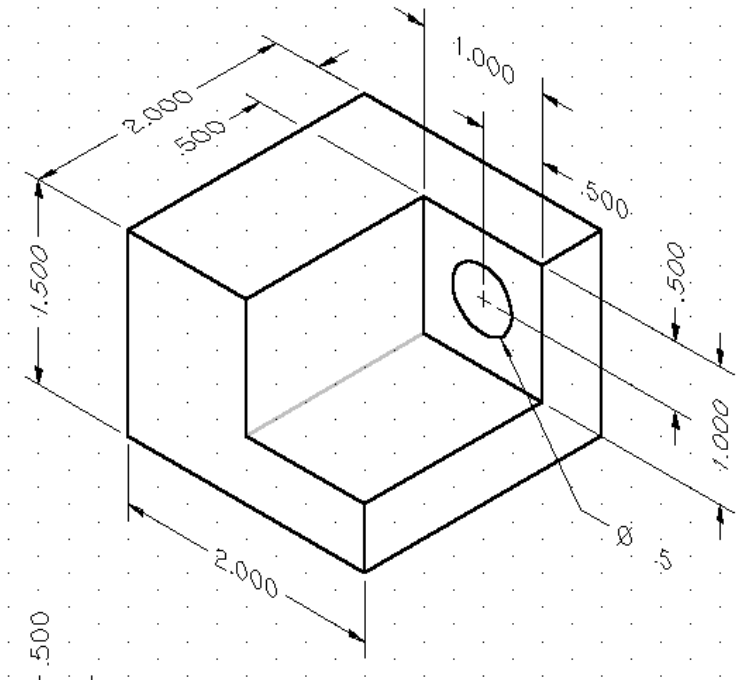
Chapter 6: Tutorial

7. Bring up the **Grid Settings Dialog Box** by doing an **Settings/Grid**, or use the  icon located in the **Settings** section.

Set the pulldown to "**On (Isometric Left/Right)**", Press the "Offset" button and click on the **snap end icon** before picking an end point on the isometric drawing. This will align the grid to enable you to draw a new line directly on the isometric view.



8. Finish the drawing by adding the line shown here in grey.



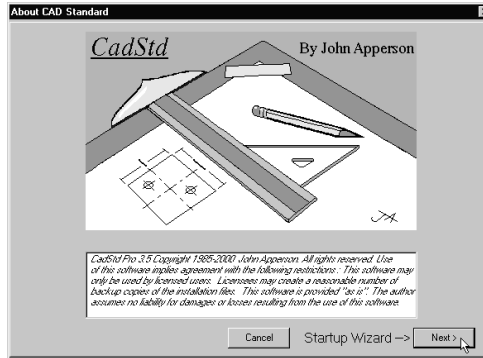
Since this isometric view is at the same scale as the orthographic view, it is technically called an **isometric drawing**. To create a true isometric projection scale all the entities in the isometric view by 0.816 using the **Edit/Scale** command. You may view a finished sample isometric drawing by opening the drawing isodraw.cad. To view a finished sample isometric projection see isoproj.cad.

Lesson 6: Creating Family History Wall Charts

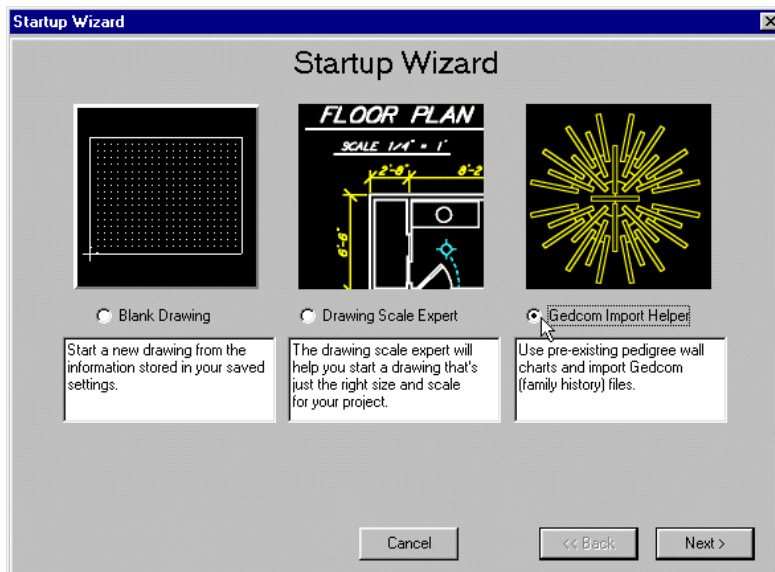
CadStd offers users a unique template for creating 5, 8 and 9 generation full-circle pedigree charts. Each name will appear in it's own box in lineal ancestry order. You have the option of showing the birth & death dates to the information.

1. Create a new folder in the directory you wish to keep your pedigree charts in. (Example: c:\CadStd\Pedigrees) If you do not know how to create a new folder, check in your operating system manual.
2. Before you can generate a pedigree chart in CadStd, you must have a current, updated gedcom file that includes the person and his/her ancestors that you want to create a pedigree chart for – it can be on your hard drive, a floppy disk, zip disk or CD-ROM, and you must know it's full path name. It will help if you know the RIN number in this gedcom file for the person you wish to create the pedigree chart for. You will import this gedcom file into CadStd, and a pedigree chart will automatically be generated. You do **NOT** need to create a special 5, 8 or 9 generation gedcom. CadStd will access your gedcom to automatically extract only the names that are needed for the pedigree chart – it will not change your gedcom file in any way. If you do not know how to create a gedcom file, check the manual or help file of your genealogy program.

- Open CadStd. (If the “Startup Wizard” did not appear, click on “File”, then “New”, and it should appear.)

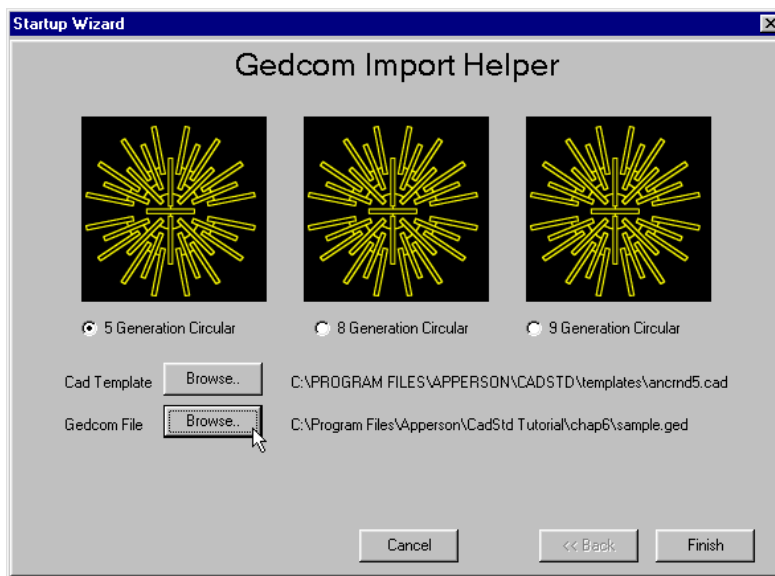


- In the “Startup Wizard”, click on “Gedcom Import Helper” and then the “Next” button.



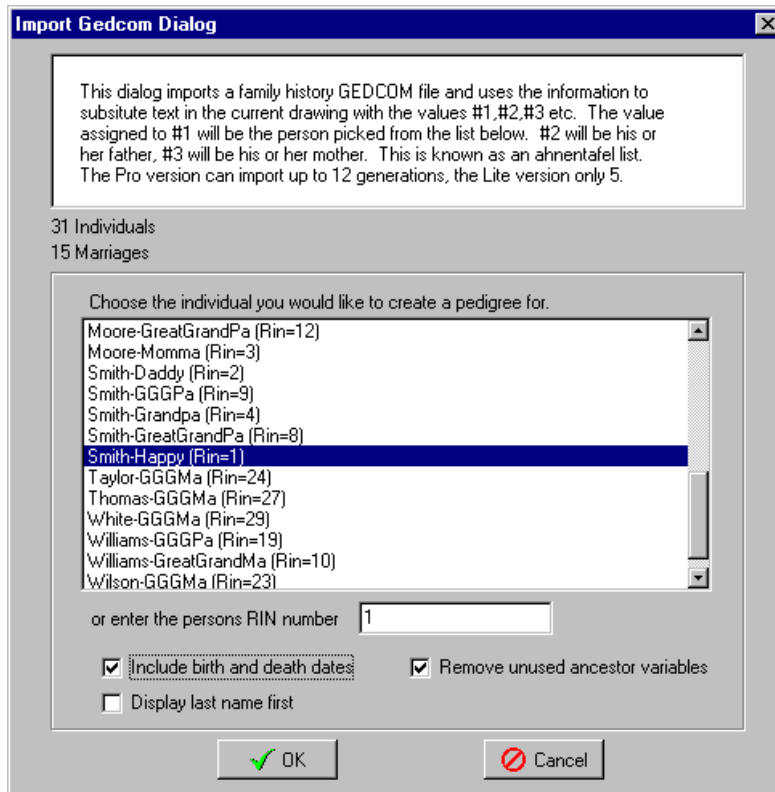
Chapter 6: Tutorial

5. You must now decide how many generations you want included on your pedigree chart – 5, 8 or 9. Click on your choice and the full path name should automatically appear on the “CAD Template” line. If the full path name does not automatically appear, click on the “Browse” button and find where these files are stored. (Example filename for the 9 generation pedigree chart: C:\PROGRAM FILES\CADSTD\templates\ancrnd9.cad)



6. Click on the “Gedcom File Browse” button; the “Open” dialog box will pop up.
7. Find the name of your gedcom file, click on it, then click on the “Open” button. The dialog box will close and the gedcom full path name will automatically appear on this line.

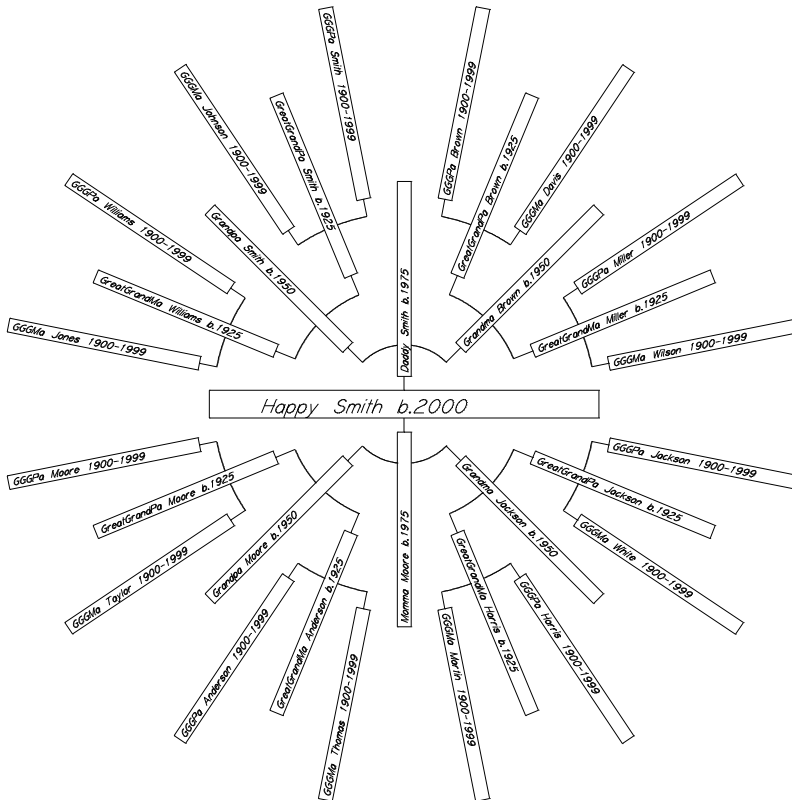
8. Click on the “Finish” button. A “Gedcom Import Dialog” box will pop up. It will show how many individuals and marriages were imported, and an alphabetical list of the individuals imported into CadStd.
9. If you know the RIN number of the individual you are creating this pedigree chart for, enter it into the “RIN number” box just below the list of names. If you do not know the RIN number, browse through the alphabetical list until you find it, then click on it.
10. Click on the box in front of the option to mark your choice: a checkmark for yes, an empty box for no:



Chapter 6: Tutorial

- A. Click on the appropriate box if you wish to have birth and death dates included on your chart.
- B. Click on the appropriate box if you wish to have the last name shown first, then a comma, and then the first and middle names. (I suggest that you leave this box empty to that the names will be in the order of first, middle and last names – it saves the space of using a comma after the last name, and that could make a difference when fitting the name in the box.)
- C. The “Remove Unused Ancestor Variables” box gives you the option of having the appropriate ahnentafel number printed in any boxes that do not have an ancestor name in them (unused ancestor variable). Mark the box if you do not wish to have these numbers in the empty boxes.
- D. After you have made these choices, click on the “OK” button.

11. After a few seconds, your pedigree chart will appear filled with the appropriate names in the appropriate lineal places. At this point it will be too small for you to read, but before you learn how to read it, you need to save it.



Chapter 6: Tutorial

12. *****VERY IMPORTANT STEP***** You must now save and name your pedigree chart by clicking on the “Save” or “Save As” button. The “Save CadStd File As” dialog box will pop up. Browse through your folders to find the folder you created to save your pedigree charts in, then click in the “File Name” box to name the file.

• You may use any method you wish of naming your files, but if you don't already have a system in place, for organizational purposes I suggest using the surname and either initials or first name of the person the chart is for. I also suggest adding a secondary tag stating the number of generations included in the file. (Examples: HansenCW.9gen or HansenCharlesW.5gen) The tag “.cad” will automatically be added to identify it as a CadStd file.

• You have now created your full-circle pedigree chart, but it probably needs some editing to make the names fit properly in the boxes. This will be easy to do, but you will need to learn a little bit about using only a few of the tools in this CAD program. Don't worry, it will be easy if you continue to follow this guide. Here are some commands to look up:

- Scroll Bars: Up & Down
- Window Options: Zoom In
- Window Options: Zoom Out
- Window Options: Center Window
- Window Options: Zoom Window
- Window Options: Zoom All
- Snap: None
- Edit: Text
- Edit: Move
- Draw: Text

TIP: When creating a chart for a sibling: Don't create a new chart for each sibling, just edit the primary individual's name on the first sibling's chart. This way you don't have to edit the whole chart again.

Alphabetical Index

Abs check box.....	23	EMF.....	80
Accuracy In Digits.....	28	Enhanced Meta File.....	80
Align.....	29	Exit.....	12
Angular dimension.....	51	Export DXF.....	11
Angular Dimension Style.....	29	Export SVG.....	11
Arc (Cen,Sa,Ep).....	40	Fillet.....	76
Arc (Sp,Ep,Mid).....	42	Gap.....	74
Arc (Sp,Mid,Ep).....	41	Gedcom Import Helper.....	26, 118
Array Polar.....	65	Grid.....	32, 86
Array Rectangular.....	64	Grid Offset.....	32
Arrow.....	47	Help Menu.....	19
B-Spline.....	54	Horizontal Dimension.....	89
chair.....	91	Icon Panel Toolbar.....	24
Chamfer.....	77	Import HPGL.....	11
Change Entity.....	70	Include File.....	53
Change Layer.....	69	Intercept.....	71
Change Line Type.....	68	Invert Select Ent.....	15
Change Text.....	66	Invert Selection.....	15
Change Text Type.....	67	Join Lines.....	72
Circle.....	43	Keyboard Input Toolbar.....	23
coordinates.....	83	Landscape.....	35
Copy.....	56	Layer Toolbar.....	20
Copy Clipboard.....	80	Leader Arrow Type.....	30
Delete.....	58	left mouse button.....	83
dimension.....	49	Line.....	45
Dimension Arrow Type.....	30	Line Type Toolbar.....	20
Dimension Settings.....	27	Mirror X.....	61
Draw Commands.....	39	Mirror Y.....	62
Draw Menu.....	13	Move.....	57
Drawing Scale Expert.....	26	New.....	11
Edit Commands.....	55	Offset.....	75
Ellipse.....	44	Open.....	11

Alphabetical Index

Paper Scale.....	36	Snap Icons.....	21
Paper Settings.....	34	Snap Intersection.....	21
paper size.....	34, 85	Snap Mid Point.....	21
Polyline.....	46	Snap Perpendicular.....	22
Portrait.....	35	Snap Tangent.....	22
Print.....	11	Snap to Angle.....	21
Project.....	79	Snap Toolbar.....	21
Radial dimension.....	50	StarOffice.....	80
Raster.....	80	Startup Wizard.....	26
Rectangle.....	48	table.....	88
Redo.....	19	Text.....	87
Replace Text.....	78	Text Slant.....	86
right mouse button.....	83	Text Type.....	86
Rotate.....	60	Trim.....	73
Save.....	11	Tutorial.....	81
Save As.....	11	Undo.....	19
Save Settings.....	38	Undo Last Exit.....	12
Scale.....	63	Unselect All.....	16
Select All.....	15	UnSelect Entity.....	16
Select Entity.....	15	UnSelect Entity Window.....	16
Select Entity Window.....	15	Unselect Menu.....	16
Select Menu.....	15	Unselect Vertex.....	16
Select Vertex.....	15	UnSelect Vertex Window.....	16
Select Vertex Window.....	15	User Prompt Status Bar.....	23
Set Grid.....	32	Vector Status Bar.....	23
settings menu.....	17	Vertical Dimension.....	90
Simplify.....	59	Window Menu.....	18
Snap 2 Arcs Tangent.....	21	Word.....	80
Snap Center.....	21	zooming.....	83
Snap End.....	22		